The American City

A Buttenheim Publication

JULY 1960

From Well Fields to Water Softening and Filtration in Wichita. See pages 3 and 100.

Providence's Expressway System

ASPHALT'S
two answers to "big city" traffic

Philadelphia's Vine Street Expressway.

Two types of heavy-duty Texaco Asphalt paving have been constructed on important thoroughfares of such leading U. S. cities as Philadelphia, Providence and Milwaukee. They are Asphaltic Concrete and Sheet Asphalt. Both are plant-mixed types, capable of withstanding the heaviest modern traffic for many years with a low upkeep cost.

The difference between the two types is in the mineral aggregate used in the pavement mix. Texaco Asphaltic Concrete employs graded crushed stone, while Texaco Sheet Asphalt calls for graded sand. These pavements are comparable in cost and performance. Either one may be specified for any heavily traveled thoroughfare. Each has been widely and successfully laid on city streets. Both types are resilient and highly durable. They are speedily laid and require no time consuming curing period. Since they are resilient and do not need expansion joints, they provide traffic with lastingly smooth, easy-riding surfaces.

The performance of Texaco Asphaltic Concrete and Texaco Sheet Asphalt on main thoroughfares of such cities as those illustrated here recommends these pavement types for your city, whether you are constructing a street, airport or parking area.

Milwaukee's West 27th Street.

Helpful booklets for City Officials

Useful information on materials and methods recommended for Asphaltic Concrete, Sheet Asphalt and other Asphalt pavement types is supplied in a free, illustrated brochure. Write our nearest office for a copy. No obligation.

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TEXACO

TEXACO ASPHALT

The
American City
A Buttenheim Publication

JULY 1960

MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

ADMINISTRATION AND GOVERNMENT

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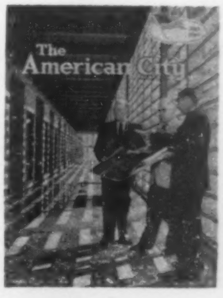
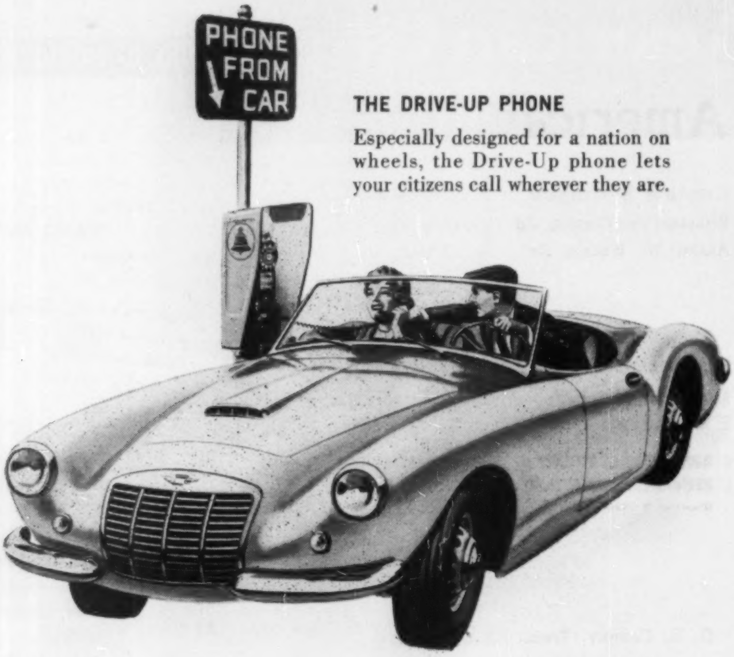


Recent additions to the Wichita, Kan., water works include this unusual aeration building. The 19 tray structures each contain four redwood coke trays. The process involves the trickling of water through the coke beds to release carbon dioxide and add oxygen that in turn oxidizes the iron and manganese.

The illustration shows Robert H. Hess, Director of Water and Sewage Treatment (right) explaining the aeration process to Mayor Justus H. Fugate (1959-60) center, and City Manager Frank H. Backstrom. See story on page 100.

NEW PUBLIC PHONES



THE DRIVE-UP PHONE

Especially designed for a nation on wheels, the Drive-Up phone lets your citizens call wherever they are.

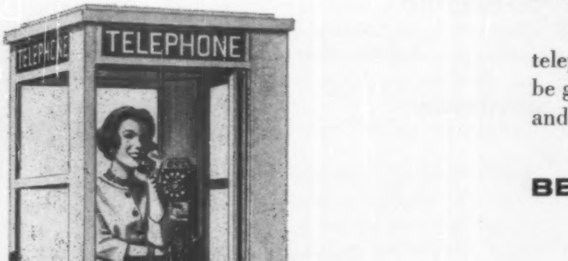
...to serve your community in new ways and places

More and more city officials are enthusiastically welcoming outdoor telephones on public property.

Outdoor telephone service provides convenience and security for your citizens. In addition, public phones on public property also earn revenue for your city's treasury—without adding a cent to your municipal tax burden.

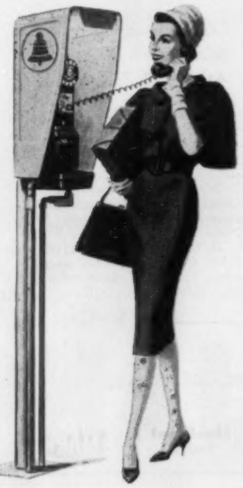
For more information about the benefits of outdoor telephones, call your local Bell Telephone manager. He'll be glad to send a representative to study your city's needs and custom design a telephone plan for you.

BELL TELEPHONE SYSTEM



THE AIRLIGHT BOOTH

The most familiar public phone is already on duty everywhere—giving service and protection 24 hours a day.



THE WALK-UP PHONE

The new Walk-Up phone is as handy as the corner mailbox—and just as convenient to shoppers and other busy pedestrians.

Volume 75 Number 7

The
American City

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LETTERS TO THE EDITOR

Incinerator Design

Just a note to let you know how much I enjoyed reading your article "When to Build an Incinerator" appearing in your March issue (p. 118).

You are probably aware, in view of Dr. Goff's article in your April issue, ("Only One Answer: Incineration," p. 94) of the problems facing this community studying the feasibility of a metropolitan refuse disposal system. Articles such as yours help bring this problem into better focus for the small communities in this and neighboring counties.

I was particularly pleased at your mention of the importance of air pollution considerations in the design and operation of municipal incinerators. As you are aware, this is a field in which I am deeply interested and active. It is encouraging to note that consulting engineers are increasingly giving their attention to the air-pollution problem as they develop specifications for new plants. I have noted the upsurge in this thinking by the number of inquiries that we have recently received.

Again, congratulations on the really fine article and for the fine magazine that you are putting together.

Fred R. Rehm
Deputy Air Pollution
Control Engineer
Milwaukee, Wisconsin

Trains on Freeways

It was good to see further comment in The American City about transit needs on freeways in the May issue ("Public Transit on Freeways," p. 106).

Everyone would not agree, however, on the planned staging of the development for automobiles to buses to trains.

On a radial route from the city center, rails should be provided for transit from the beginning. As pointed out in Mr. McConochie's article, subways are needed in the business district and bus subways are not only impractical from an air pollution standpoint, but they are impossible economically. Since rail cars operate at less cost per passenger mile than buses, and since the cost of building a busway, then removing it and building a railway is prohibitive, the railway should be built from the start. Buses are best suited for use on city streets where they get their right-of-way for nothing, but such an operation is too slow to attract transit riders in the necessary quantity.

E. L. Tennyson
Transit Operations Engineer
Philadelphia, Pa.

Correction

We were pleased to note in your May issue an article on page 36 concerning one of Philadelphia's newest storm sewers ("Motorized Sewer Inspection"). We note that you have referred to the concrete placer used to blow in the concrete on the arches as a "Schwinn." This is actually a "Schwing" Concrete Placer for which Engineered Equipment, Inc., has sole distributing and sales rights in the United States.

The Schwing machine takes about half the air for the same output of concrete as other similar machines on the market. The second advantage of the machine is its lack of moving parts. There are no parts to wear down such as air pistons, water traps, doors of various types and no gaskets to blow.

L. E. Parker
Sales Manager
Engineered Equipment, Inc.
Waterloo, Iowa

Incinerator Error

I can't help but charge you gently after reading Stellwagen's article in The American City for February 1960, and particularly after reading a reprint of this article ("Calumet Incinerator — Chicago's Second, Nation's Largest," p. 96). In Table II of performance data you note in rather interesting fashion that air-pollution test results are expressed in grams per cubic foot and further go on to explain that readings are corrected to SCTP and 12% CD Basis. Is this Civil Defense that you are referring to?

I know that The American City rarely makes mistakes but you really pulled a couple of beauts on this one.

William T. Ingram
Consulting Engineer
Whitestone 57, New York

Editor's Note: This was an embarrassing error and we've been hearing about it. Anyone wishing a reprint with the material in the table correctly listed, please drop us a note.

"CAN DO!" PERFORMANCE backed by "HAVE DONE" EXPERIENCE

THE MASSEY-FERGUSON 204 is the most versatile and maneuverable unit a city could own!

EQUIPPED WITH INSTANT REVERSE

The Massey-Ferguson Backhoe is the ultimate in efficiency. It has 14,000 pounds breakout power; permits unobstructed visibility; will dig flush to walls, fences, buildings. See why it is the most popular backhoe in America.

For a compact, versatile, and maneuverable utility rig there's nothing that compares with this 40-h. p. Massey-Ferguson 204 equipped with power-matched Loader and Backhoe. It has been put to the test by hundreds of public works departments and has always come through in the best "CAN DO" tradition. The 204 is equipped with Instant Reverse and Torque Converter. It saves time on every job . . . moves in and out of congested areas with ease . . . and speeds up cycle time between load and dump. Just a touch of the foot pedal and it changes direction of travel instantly and smoothly. The same pedal controls acceleration, and speeds are equal in both forward and reverse. It also features power steering, and is available with the famous Ferguson system. For loading, clean-up, backfilling, landscaping, or any of the hundreds of maintenance chores a city has to perform, it has no equal. Before you buy any industrial equipment, check into the full line available at your Massey-Ferguson Industrial dealer.

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Producing Sizeable Power for the "Sensational 60's"

MF60-20

GUEST EDITORIAL

Problems of Urban America

By **F. L. BYROM**

As we look at urban America today three problems stand out sharply.

First, the structures and landscape are changing rapidly, but unevenly, causing many dislocations and contradictions that have not yet received sufficient thought.

Second, too many of the structural changes use designs of unadorned utility, of unimaginative conformity. Too few reflect imaginative, creative designs offering realizable combinations of efficiency and beauty.

Third, fast-moving changes in where and how Americans live, work and play are creating immense pressures for large-scale centralized planning which, to many, is opposed to our way of life.

To illustrate the first, one of the great difficulties is that the nation has 32,000,000 Americans who presently live on less than $50 a week for a family of four—and what is missing is housing that these Americans can afford. Moreover, the nation has an increasing number of young people not yet able to become homeowners and a growing group of people over 65—and here again, what is missing is well-planned attractive communities with housing for these people.

I make no pretense of knowing the answer to these problems but I know they must be solved by responsible people.

I include, as responsible people, businessmen whose employees live in these areas. I include architects whose skills are needed to design better, less expensive housing, schools, and community facilities. I include labor organizations whose responsibilities must be greater than simply concern for wages and working conditions. I include officials of local government whose building codes and zoning laws will affect the future of housing and community government. All these people must become part of the solution to the problem—not part of the problem.

The second blemish is perhaps more aesthetic and personal. Where are those who will give us creative design offering realizable combinations of efficiency and beauty?

Why must new housing developments look as though they were designed by box makers rather than architects? Why must gas stations look as though they wanted only to sell gasoline and cared not one whit about their neighborhoods? Why must roadside ice cream stands look only like hucksters peddling ice cream?

How can we have more gracious parks and playgrounds? How can we have and maintain beauty in our highway system?

The third shadow on the face of America is essentially political in nature. We find ourselves with many pressures for increased governmental planning which encroaches on the rights of individuals in the name of public good. Nowhere are they more direct than in such areas as city planning, urban redevelopment, and mass transportation. The part which should concern us most is the impact of the "super city." It offers both a threat and a promise.

The threat is obvious. In this growing metropolitan complex, where will the parks be? The schools? The playgrounds? The churches? The beaches? Will they be dropped haphazardly beside the hot dog stands and factories? Can they escape the taint of their surroundings?

The promise lies in the opportunity to create beauty and order in the process of filling the partly empty spaces which still exist. But how do you do this when it means the cooperation of a number of municipalities, frequently in as many as three states?

The inspiring encouragement is that wise and practical local government officials, often unjustly maligned, are providing these answers on a piecemeal basis. We see area-wide sanitation commissions, regional air-pollution agencies, city-county planning groups, as well as inter-municipal fire and police protection, and urban transportation units.

Many cry for a new level of metropolitan government, but perhaps this piecemeal approach is the better method. At least these local officials are getting the job done without destroying the integrity of home rule that must be associated with the government of a free people.

Of course, many other problems plague today's cities. For example, assuring the continuing availability of our water resources poses problems for the nation; air pollution demands attention; traffic handling is continually more difficult as the assimilation of a dynamic mobile population presents difficulties. As an urbanized civilization based on the individual rights of a free people, we must face all of these problems objectively, unselfishly, and boldly. A free society must be urged along by the dedicated efforts of those who wish to maintain the great benefits that belong to a nation of free men.

EDITOR'S NOTE: Mr. Byrom is Vice-President and General Manager, Tar Products Division, Koppers Company, Pittsburgh, Pa. He based these comments on observations he made recently before an architectural awards banquet in Pittsburgh.

In July, Plan for Winter Snows

Despite midsummer temperatures, street superintendents and other officials of many cities are already giving thought to snow and ice removal. Their work consists of checking over and ordering new equipment, checking new methods of operation and investigating new ideas.

For example, New York City, normally a big user of heavy snow-removal equipment, in recent years has added considerably to its small-equipment fleet and finds good use for such equipment. In this fleet are 100 Minneapolis-Moline tractors with snow plows.

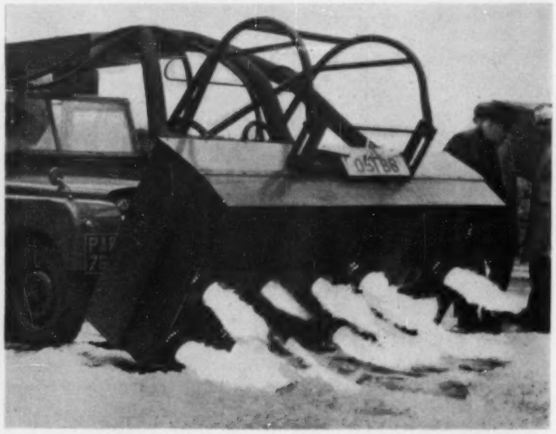
Philadelphia purchased a warehouse for the storage of salt and estimates this action alone will save the city approximately $87,000 annually. Streets Commissioner David M. Smallwood says the storage facility permits the Highways Division to buy salt in bulk at $14 per ton, whereas previously it was purchased in bags at $31.40 per ton. The department uses about 5,000 tons a year.

Last winter in Newcastle-upon-Tyne, England, city officials viewed a Snow Locust machine. This unit consists of 12 jet burners designed to melt the snow and ice in front of the carrying vehicle. Each oil burner has a variable heat output of from 40,000 to 120,000 BTU per hour at a temperature of 1,200 degrees F. The unit can clear up to five miles of snow and ice per hour.

One generally associates the big V-plow with mountainous terrain or wide open spaces. Yet almost every northern city has at least one of these units to take over when the really big storm comes or heavy drifting occurs. Last winter the community of Little Chute, Wis., put its V-plow to work after a 10-inch blizzard closed highways, schools and business in the Fox River Valley. Although not used often, such equipment must be kept ready for the time it is really needed. ◂◂

Coca-Cola
LIGGETT
PRESCRIPTIONS
WANT AD

Big New York City is making increasing use of small tractors with specially designed plows.



This unit melts the snow and ice covering a strip up to five miles long per hour. It was demonstrated in an English city last winter.

Why Streets Are Cleaner in Europe

Why do European streets appear so clean to American tourists? They are cleaner, but not because Europeans are more amenable to discipline, or value cleanliness more.

Americans use—and throw away—some 400 pounds of paper yearly per capita; Europeans, less than 40. Overseas, the hand-salvage of old rags, glass and metals is a recognized industry. Wages for hand cleaners are low. And the all-day street parker is largely an American phenomenon.

In Europe the problem becomes a question of removing dirt. In New York and most other American cities street cleaning consists of collecting a huge amount of heavy litter plus some dirt.

Let's look at the typical American department:

Labor and Personnel. With the adoption of retirement plans and other benefits in the post-war era, sanitation departments compete with industry and also upgrade their personnel. They employ training programs and other modern industrial techniques.

Mechanization to replace expensive hand-cleaning has become widespread since World War II. For example, New York City machine-cleans 4,800 of its 6,000 miles of streets. Alternate parking regulations made this feasible. The city also pioneered in developing efficient equipment.

Modern snow-clearing operations require year-round planning to avoid complete traffic breakdown. Salt spreaders and improved weather forecasts help.

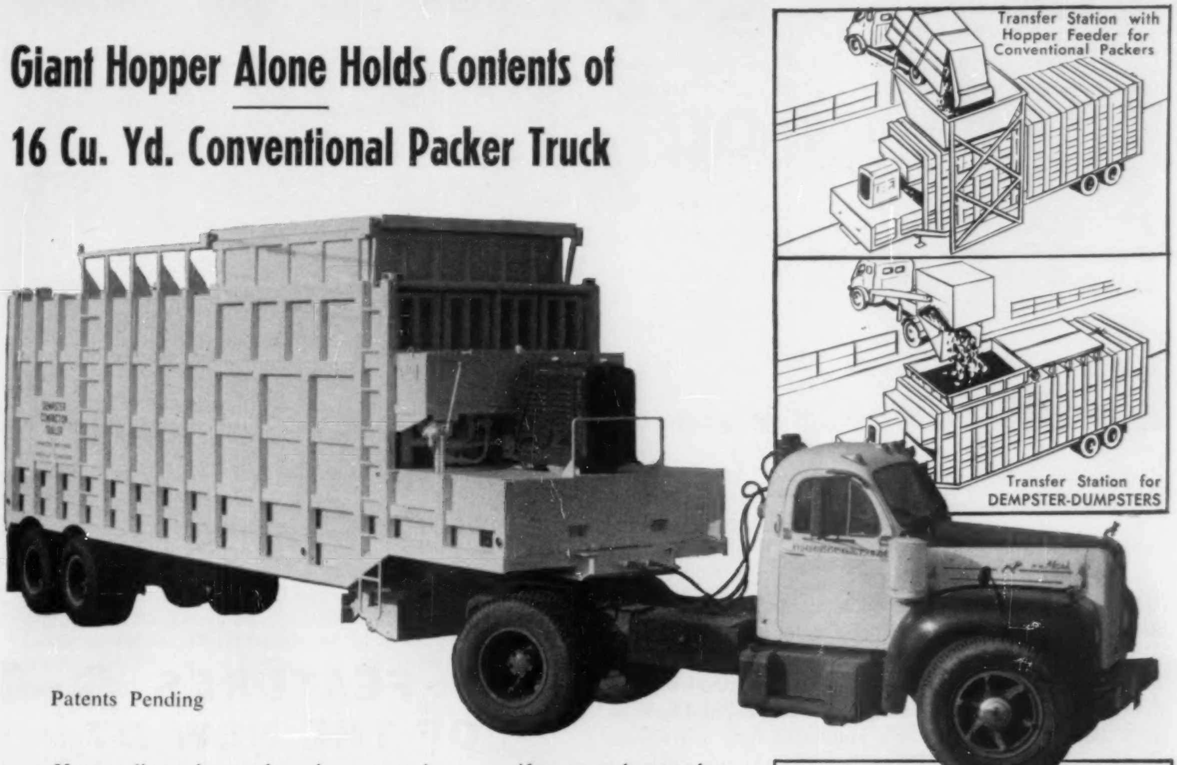
Litter prevention measures, publicized by citizen's groups, help decrease the material to be removed.

Officials responsible for street cleaning as well as manufacturers of equipment and materials used for this work are constantly searching for ways to improve efficiency. But it is the last item that can provide the most drastic—and beneficial—results. The more litter, the tougher and more expensive the job. Less litter means cleaner streets, for then street cleaning departments can spend time truly keeping streets clean—instead of picking up litter which often accumulates shortly after the sweeper passes by.

Paul R. Screvane, *Commissioner*
Department of Sanitation
New York, N. Y.

New DEMPSTER Compaction Trailer Hauls Up To 200 yds. of Loose Refuse

Giant Hopper Alone Holds Contents of 16 Cu. Yd. Conventional Packer Truck


Transfer Station with Hopper Feeder for Conventional Packers

Transfer Station for DEMPSTER-DUMPSTERS

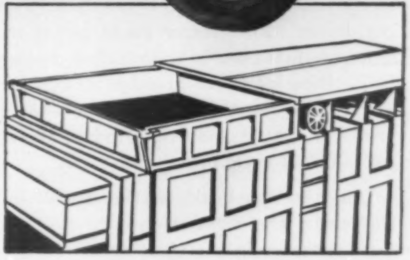
Patents Pending

If your disposal areas have been moved out . . . if your packer trucks and DEMPSTER-DUMPSTERS are making longer and longer hauls . . . you can cut your costs to the bone with the new DEMPSTER Compaction Trailer. This portable transfer station can be placed beneath a ramp or bank in a central location. Then your trucks travel only blocks instead of miles. The big hopper itself holds the contents of a 16-yard packer truck.

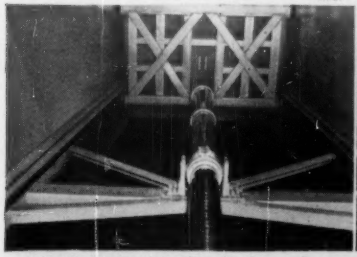
One of the several cities using this new trailer stands to save over $32,000 in the first year of operation of only one unit.

The DEMPSTER Compaction Trailer is all hydraulic, and has its own power plant. Both the 42-yard and 53-yard models deliver 60,000 lbs. hydraulic pressure to the face of the packer plate, enabling users to get (depending on the density of the material) 160 to 200 cu. yds. of loose refuse per trip.

For complete information, send for the free eight-page brochure that describes this new development.


The rolling hopper cover illustrated above increases the capacity of the trailer and prevents refuse scattering.

Dept. AC-7 DEMPSTER BROTHERS, Inc. Knoxville 17, Tenn.


Inside view of trailer showing telescopic packer head cylinder that delivers pressure of 60,000 pounds.

Typical load of refuse being ejected by the packer plate. No tilting of the trailer is necessary.

To: Dempster Brothers, Dept. AC-7
Knoxville 17, Tennessee

Please Send Brochure on New DEMPSTER Compaction Trailer

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Firm______________________________

Address____________________________

City________________ State__________

Report from Pikes Peak, Colorado

They've got to be good for jobs like this..."

CATERPILLAR
D7
CITY OF COLORADO SPRINGS

"Dozing rock at high altitudes is a mighty tough job," says Al Mason, Field Superintendent for the Water Division, City of Colorado Springs, Colorado. But the city's new Cat D7D Tractor takes the work in stride, proves it more than meets the test. Here it demonstrates power and stamina as it speeds development of a municipal reservoir system on the northern slopes of Pikes Peak. The engine's exhaust gas driven turbocharger packs plenty of air into the cylinders so that even in the rarefied atmosphere the 140 HP D339 Diesel Engine breathes easily and efficiency stays high. "The improvements on the new D7 make it a real producer," Al Mason said. And an average of 1¾ minutes per 300 foot cycle proves him right.

On the Pikes Peak job, the new D7 builds service roads and clears the right-of-way for pipelines. Although the work often calls for clearing 20 to 25 foot stretches of blasted rock, maintenance on the D7 is no more than routine. The exclusive Caterpillar oil clutch, for example, generally needs only adjustment when other clutches need replacing. Other time-saving, cost-saving features are the tractor's service-free lifetime lubricated track rollers, hydraulic track adjusters which make it easy to keep track in perfect alignment, a long-lived pressure-lubricated transmission and a dry-type air cleaner that takes less than five minutes a day to service. These are just a few of the reasons the D7D offers more value for the taxpayer's dollar than any other machine of its size.

See your Caterpillar Dealer for the facts and figures. He'll show you how the D7 can earn its keep in high production, tell you why its top-quality construction and low maintenance mean sizeable yearly savings.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

FEATURES OF THE NEW D7

TURBOCHARGED ENGINE with 80 per cent more lugging ability for greater production.

LIFETIME LUBRICATED TRACK ROLLERS with patented floating ring seals eliminate maintenance time and costs—they never need servicing and new load carrying design extends roller life.

PRESSURE-LUBRICATED POWER TRAIN insures complete circulation of oil to transmission, bevel gear and pinion. Added strength in components takes the increased power with room to spare, keeps down time to an absolute minimum.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

THE NEW D7
FIRST IN QUALITY
LOWEST IN FINAL COST

Red rubberized asphalt and red precoated chips give this new city thoroughfare an unusual appearance; the flower-box divider adds additional color.

A Red Street That Stretches

Birmingham, England, like Birmingham, Ala., and other American cities, is constantly alert to the traffic problem. The English city's latest step to ease traffic is the construction of a dual three-lane thoroughfare with an eight-foot loading apron on each side. This colorful stretch of rubber-and-asphalt street is interesting for several reasons.

First, the color is red and second, the rubber is natural. To put the color into the street, engineers specified a 1¼-inch-thick wearing course of red-colored rubberized asphalt mixture dressed with ½-inch red precoated chips. This was placed over a 2¾-inch base also containing rubberized asphalt which, in turn, was laid on a concrete foundation.

Adding natural rubber to the asphalt gives the mixture increased flexibility, thereby providing long wear with minimum maintenance.

The divider strip, described as a continuous flower box, lends a festive air of floral decoration to the street and provides added color. The street is flanked by the most modern shops and office buildings.

Birmingham first used rubber on a bus-stop in 1951. After six years of watching and testing, the city started to incorporate rubber and asphalt combinations on a number of road-laying projects. Satisfactory results led the city to use this type of material on its latest project, an up-to-the-minute highway ring.

Current emphasis on the use of rubberized asphalt in the United States is in surface treatments and seal coats. The Natural Rubber Bureau is keeping close watch on experimental test installations in New York, North Carolina, Virginia, Tennessee and the Province of Ontario to see whether their performance records will establish the merit of natural rubber for surface treatment construction. ◄◄

Research to Emphasize Urban Problems

A recent report to the Highway Research Board by a Special Committee on Highway Research Priorities recommended an expanded national program of highway research during the next four or five years which would cost an estimated $34 million. Although dealing chiefly with all phases of rural road, highway and expressway work, the report suggested additional research on several problems in the urban field. These included:

1. An analysis of methods of coordinating city planning and highway planning. The proposed research would seek to determine the problem areas mutual to city and highway planners and to seek ways to exploit the work of each group to complement the other, and then to determine what changes are needed in the legal and administrative machinery of both functions in order to coordinate the work more effectively.

2. Improvement of comprehensive planning to achieve transportation objectives. In this area the research would seek to determine the components of comprehensive planning and how effectively it is being used, the needs and how they can be met.

3. Investigation of the central business district in relation to highway planning. Research in this area would provide a better understanding of the nature of the central business district, the way it is affected by street and highway improvement, and methods of incorporating this into the planning process to assure the most efficient development of facilities and provide the most salutary effect on the central business district. ◄◄

More mileage for your tax dollars

Specialist at Many Jobs

When you buy a "PAYLOADER" you get more than just a tractor-shovel. You get the most *proven,* also the most *useable* of tractor-shovels because of the most complete and unusual selection of attachments ever made available for *any* tractor-shovel. Included are several that are exclusive on "PAYLOADER" machines.

Reduces Your Equipment Costs

With one basic machine of broadest usefulness, you eliminate the big investment in specialized single-purpose machines. Then you continue to cut costs because you can keep a "PAYLOADER" busy more hours of the day and more days of the year. That is why we say it will pay you to see your Hough Distributor — soon.

PAYLOADER®

Back Hoe

Digs, swings, and dumps in 180° radius. Long digging reach, smooth, accurate operation. Installed or removed in a matter of minutes.

Blacktop Spreader

Lays hot or cold mix for patching or paving. Lays up to 8′ widths and 0″ to 6″ thickness. Hopper capacity is two cubic yards.

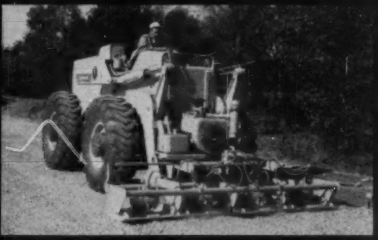
Side-Boom

Lifts up to 10 tons at 4′ overhang. Completely hydraulic control with telescopic boom reaching out to 16′. Cable drum has free spooling release.

a single machine gives you

4-in-1 Bucket

Most versatile bucket for many jobs. Hydraulically controlled, functions as regular bucket, bulldozer, clamshell or self-loading scraper. No end to its uses.



Vibratory Compactor

Four 30″ shoes, equipped with individual electric motors, develop specified densities in granular soils. Self-contained easily attached and removed.

Fork Lift

Easily and quickly interchanges with bucket, to handle pallets of brick, loads of lumber, sheeting, etc. Spacing of forks adjustable. Hydraulic controls.

a construction equipment fleet

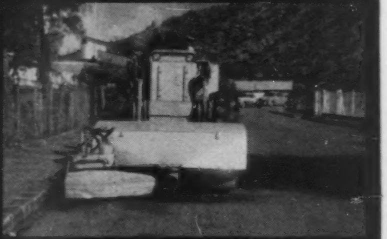
Snow Plows

Self-powered, self-contained rotary snow plows available for most "PAYLOADER" models. "V", one-way and reversible plows also available.

HAM Leaf Loader

Leaf Loader

Picks up leaves and debris and discharges into truck. Cuts leaf handling costs by 30%. Will also handle light snow. Easily installed and removed.



Pick-Up Sweeper

Main broom and gutter broom hydraulically driven. Sweeps 6 to 7 ft. path. Can dump its accumulated loads directly into trucks or on street as desired.

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

THE FRANK G. HOUGH CO.
710 Sunnyside Ave., Libertyville, Ill.

Send Bulletin "More Mileage for Your Tax Dollar" covering the complete "PAYLOADER" line and many useful attachments.

Name ____________________

Title ____________________

Gov't. Unit ____________________

Street ____________________

City ____________________ State ____________________

7-8-3

LOCK JOINT
the pipe that keeps on saving!

The purchaser of Lock Joint Concrete Pressure Pipe gets his first pleasant surprise at the reasonable initial cost of the product; his second at the ease and economy with which it can be installed. But long after the pipe has been buried and forgotten, it demonstrates even more graphically its saving ways. Because of the pipe's extreme durability, replacement costs are virtually non-existent. Maintenance requirements are so negligible that savings on repairs during the pipe's useful life span of more than 100 years may easily represent a substantial portion of the line's initial cost. Its permanent high carrying capacity cuts pumping charges to the bone and eliminates costly periodic cleaning of the line. In every way Lock Joint Concrete Pressure Pipe not only provides economies for the purchaser, but continues to pile up savings year after year, for generations.

LOCK JOINT
MADE ITS WAY
IN THE WAY ITS MADE
CONCRETE PIPE

LOCK JOINT PIPE CO.
East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn.
Kansas City, Kan. • Perryman, Md. • St. Paul, Minn. • Winter Park, Fla.
Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

Pipe Change Lowers Tunneling Costs

Workmen install the final pipe section in one of the four tunnels. The next step consists of filling the space between the pipe and the tunnel wall with sand-cement grout.

Changing pipe materials in four tunnel sections on Fort Worth's new 72-inch sanitary sewer main saved money for the city. The tunnels were used to cross under one heavily travelled street and three separate railroad lines in order not to interrupt traffic.

Under a sub-contract with the general contractor, the Armco Construction Department constructed a total of 700 feet of 84-inch-diameter tunnel at the four sites by use of liner plates. Instead of continuing through the tunnels with the extra heavy concrete pipe used on the major portion of the sewer line, Armco Smooth-Flo sewer pipe was substituted.

Several reasons influenced this decision. First, the outside diameter of the rigid pipe was 88 inches, requiring a tunnel of at least 96 inches in diameter. Outside diameter of the Smooth-Flo pipe is only about 73 inches, making it possible to use a smaller tunnel section requiring less material. Thus tunneling costs were reduced. Secondly, the lighter pipe made it easier to thread the pipe sections through the tunnel, thereby reducing labor costs.

After constructing the tunnel and threading the pipe, workmen filled the space between the pipe and liner plate with a sand-cement grout. A pressure grouting machine forced the material into the annular space through equally spaced grout plugs fabricated into the pipe when it was made.

All work was done under the supervision of C. Milo Thelin, Director of Public Works, and Walter S. Van Natta, Sanitary Sewer Superintendent. Carter and Burgess of Fort Worth were the consulting engineers. ◄◄

Sewage Purification Lagoons

The sewage purification lagoon means that the small independent community can provide this sanitation service at $10 to $15 per person served. The lagoon or oxidation pond is not only economical, it provides purification equal to secondary processes and can be the source of irrigation water.

In North Dakota, the lagoon method requires these general features:

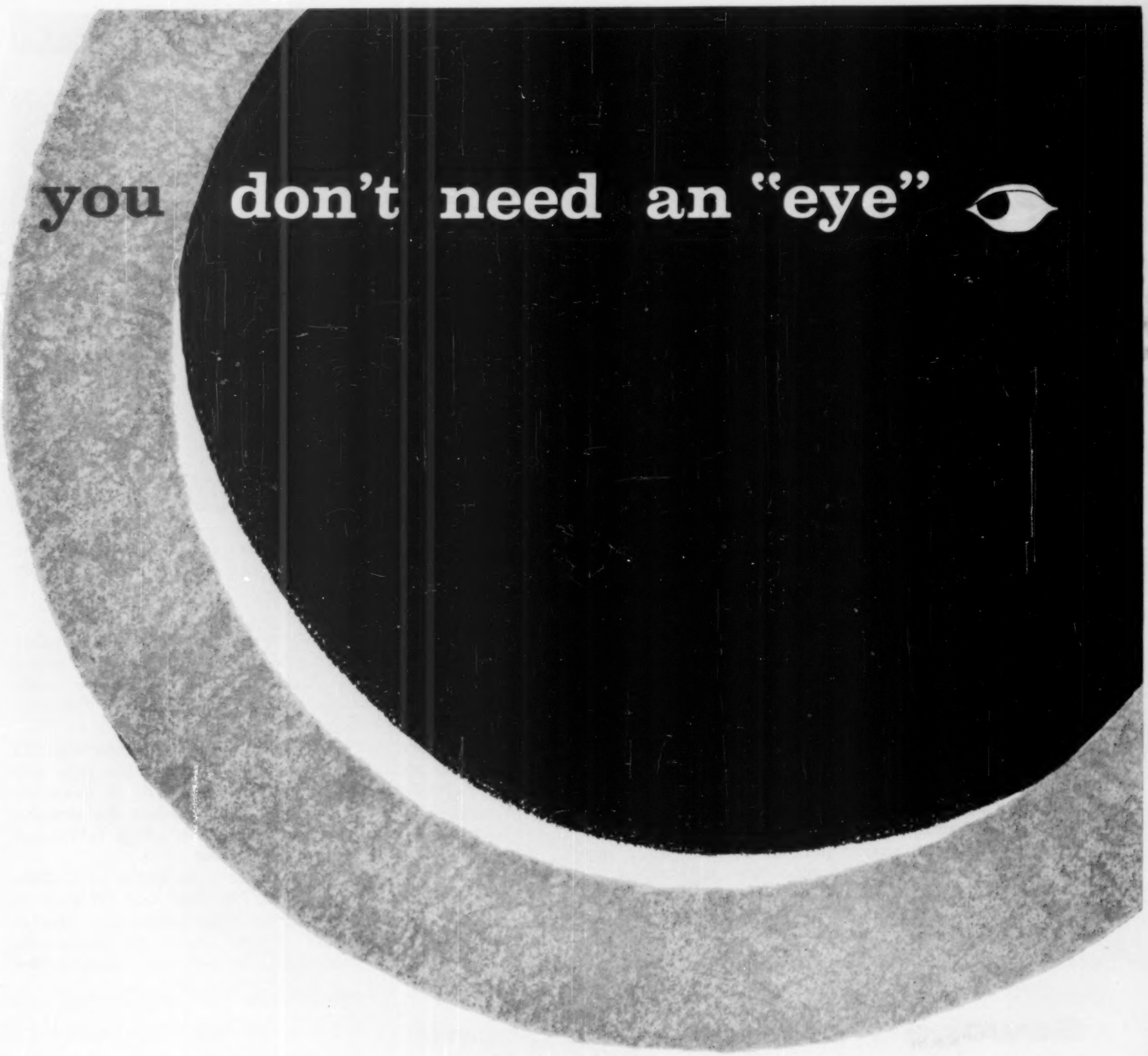
- **a land area of about 30 acres per 1,000 people served**
- **a lagoon area of about 10 acres per 1,000 people served**
- **dikes that are 8 feet high, have a 10-foot berm, and a slope on the lagoon side of 1:4**
- **a water depth of 3 feet minimum, 5 feet maximum**
- **influent line at the center of the lagoon at the bottom**
- **location one-half mile from the city limits**

In rolling country areas, one often can build multiple lagoons and operate them either parallel or in series; these often are more economical than a single large lagoon. In any case, one should remove the black dirt, and uncover a relatively porous subsoil, using the excavated soil for the dikes. The influent line should be laid in a shallow trench on the lagoon bottom, with its discharge end rising six to eight inches above the bottom. The lagoon should be fenced and the embankment seeded.

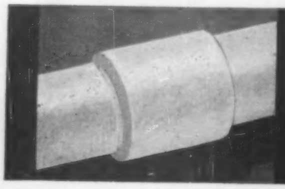
The lagoon operates by settling out the heavier solids, and letting the waves disperse them. Aerobic bacteria and other plant and animal life then destroy the polluting material. Algae ingest some of the pollutants also, releasing oxygen which prevents putrefaction and septic conditions. Sludge accumulates very slowly. We estimate that it would take 130 years for one foot of sludge to accumulate.

Costs are low, varying from $10 to $15 per person served, for communities with populations between 500 and 1,500.

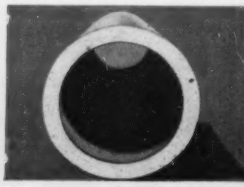
C. L. Bradley
Supervising Sanitarian
Fargo, N. D.



Keasbey & Mattic



Exclusive, patented "K&M" FLUID-TITE Coupling forms a permanent leakproof seal.



Permanently smooth bore provides excellent flow characteristics.

👁 out for trouble after you install

"K&M"

ASBESTOS-CEMENT SEWER PIPE

"K&M" Asbestos-Cement Sewer Pipe helps you provide the best sewer service available . . . with tax savings that go on year after year.

This thrifty pipe is infiltration-proof, even when external water pressure is 25 psi. Prevents your sewer system from reaching full capacity years ahead of schedule, due to water infiltration. "K&M" Asbestos-Cement Sewer Pipe, with exclusive, patented FLUID-TITE Coupling, forms a permanently tight seal.

In planning your system, you can build on flatter grades with "K&M" Asbestos-Cement Sewer Pipe. Need fewer lift stations. The permanently smooth bore of "K&M" Asbestos-Cement Sewer Pipe has a Manning factor of n = 0.010. Flow characteristics are excellent. Inspections and treatment loads become less frequent.

This thriftiness carries over into installation. Neither weather nor soil conditions need hold up work. The "K&M" FLUID-TITE Coupling slides on in just two easy steps. Longer pipe lengths minimize the number of joints.

Write today for more detailed and illustrated information on hardy "K&M" Asbestos-Cement Sewer Pipe. Learn why thousands of progressive communities have turned to this durable quality pipe. Write to: Keasbey & Mattison Company, Ambler, Pa., Dept. P-570.

son at Ambler

K·M
BEST IN ASBESTOS

Easy installation! Couplings join quickly. No heavyweight coupling pullers needed.

"K&M" PLASTIC SEWER PIPE complements "K&M" Asbestos-Cement Sewer Pipe in many sewer systems. Excellent flow characteristics and permanently tight joints. Write for Technical Bulletins on "K&M" High-Impact Styrene-Alloy Sewer Pipe. Dept. P-570.

R R
STOP
IELD
IGHT
OF
WAY

Now...one coat of enamel combines rust inhibition, durability and color retention

For the first time these three factors can be provided in one paint containing M50® pigment.

Here's news of a new type of enamel that greatly simplifies the painting of highway signs.

With these new enamels, *one coat* is all that is needed. This single coat combines . . . for the first time . . . more rust inhibition than ordinary primers with even greater durability and "color fastness" than most finish paints. What's more, except for white, these enamels can be made up in all the colors normally used in highway sign painting.

A unique new pigment . . .
M50® basic lead silico chromate . . . gives the one-coat enamels their exceptional properties. In this pigment, one of the most effective of all rust inhibitors, basic lead chromate, is solidly fused to an inert core. In metal protective paints, exposure tests have proved that this pigment maintains high rust inhibiting activity for years and substantially retards color fading.

Greatly inhibits under-the-film rust creepage, as well
As you have probably noticed, when ordinary enamels are nicked or damaged in service, the rust that starts spreads under the paint in no time. As this rust creepage continues, paint flakes off to open the way for further corrosion. The new *M50* one-coat enamels greatly reduce such premature destruction of the paint film . . . help keep sign repainting needs down.

Before you order paint again . . .
Look into these unusual new enamels. They can be made up by your regular suppliers in standard colors.

M50® *an* **oncor** TRADEMARK *Pigment . . . A Development of* **National Lead Company**
General Offices: 111 Broadway, New York 6, N. Y.

Urban Health and Environment Courses

Two courses on "Urban Public Health and Residential Environment" will be given this summer by the American Public Health Association at Southern Illinois University, Carbondale, Ill. The first course, "Housing Quality Technique," will be held July 11 to August 6 and will qualify a group of not over 12 trainees to become housing survey directors. The second course will be a seminar devoted to "Housing Hygiene and Urban Renewal" and will be given August 8 to 12 to anyone desiring it; it is primarily for supervisory personnel from public health, housing, planning and urban renewal fields.

The courses will discuss the following subjects: trends in federal housing programs; public housing of the future; relocation programs and problems; city planning for urban residential environment; housing survey methods; public control of land use; code enforcement programs; rehabilitation and conservation; public health in urban renewal; housing the elderly and chronically ill; accident prevention; socio-environmental aspects of mental health; citizen participation and economics of housing.

There will be no charge for the course or the materials used in the course. Application forms can be had from: Chief, Training Branch, Communicable Disease Center, 50 7th St., N.E., Atlanta 23, Ga. ◄◄

No House Numbers On the Curbs

In Beverly Hills, Calif., no salesman will be permitted to circulate through the residential area and sell the local householders a stenciled house number on the curb in front of his home. This is prohibited by ordinance. However, periodically some sales concern makes a strong appeal to the Council for the right to sell these numbers on the public street. Objections have been that:

- **Tires soon wear the numbers away, requiring annual renewal.**
- **The numbers look unsightly during the wearing process.**
- **Parked cars often hide the building numbers.**

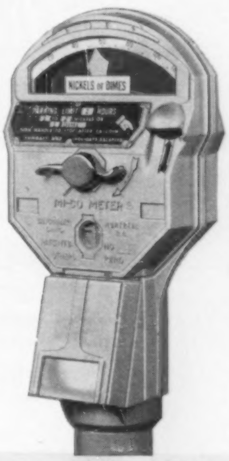
An ordinance prohibiting the curb numbering has been in effect for many years according to John B. Wentz, Administrative Officer. ◄

Your *cost is low,* Your *income high*
You *move cars, keep drivers happy*
with

MI-CO

PARKING METERS

More than 500 communities have benefited financially and traffic-wise from MI-CO manual parking meters' years of service. Here's a handsome, sturdy meter with all parts made of stainless steel, clock brass and brass forgings, or die castings. Moving parts number only six, ensuring dependable operation in any climate, and minimum downtime. Adjustable to any number of hours, and 1¢ to 25¢, with one coin slot. They pay for themselves fast, and for years provide constant revenue collection and traffic assistance. Write for complete facts on MI-CO Manuals, Twin Automatics, and the popular Security Collection System.



A Symbol of High Quality

MI-CO PARKING METERS, P. O. BOX 668-A, COVINGTON, KENTUCKY
(The Michaels Art Bronze Co., General Offices and Plant, Erlanger, Kentucky)
OTHER MICHAELS PRODUCTS: Architectural Metal • Curtain Walls
Display Cases • Reversible Windows • Tablets • Memorials • Signs

ROCK AND ROLL?

Not with Allis-Chalmers Utility Tractors

To get better balance, you spread your feet . . . that's just what Allis-Chalmers has done with a longer wheel base, and you still get the most maneuverable rig in its power class.

For maximum stability, you keep weight low . . . Allis-Chalmers does just that, the low profile shows it clearly . . . yet there's plenty of clearance under the axles.

When you choose an Allis-Chalmers utility tractor, you get a clean rig, free from frills, easy to service . . . and set for the job in minutes. Put your investment in *working design* that saves money on every job.

Get all the facts on Allis-Chalmers utility tractors. It doesn't cost to find out!

D-10 • D-12 • D-14 • D-17

Utility tractors from 34 to 63 engine horsepower with companion equipment to match your needs!

ALLIS-CHALMERS

60-8

ALLIS-CHALMERS MFG. CO
Utility Tractors & Equipment, Milwaukee 1, Wisconsin

Please send me more information about Allis-Chalmers utility tractors with ☐ backhoe ☐ loader ☐ fork lift

Name__________

Firm__________

Address__________

City__________ State__________

SOLD BY ALLIS-CHALMERS DEALERS EVERYWHERE

Employees in 3 Cities Form Credit Unions

Employees of three cities located in Michigan, New Mexico, and Idaho, recently formed their own credit unions. They are:

Boise, Idaho, with a potential membership of 300
Hobbs, N. M., with a potential membership of 180
Oak Park, Mich., with a potential membership of 525

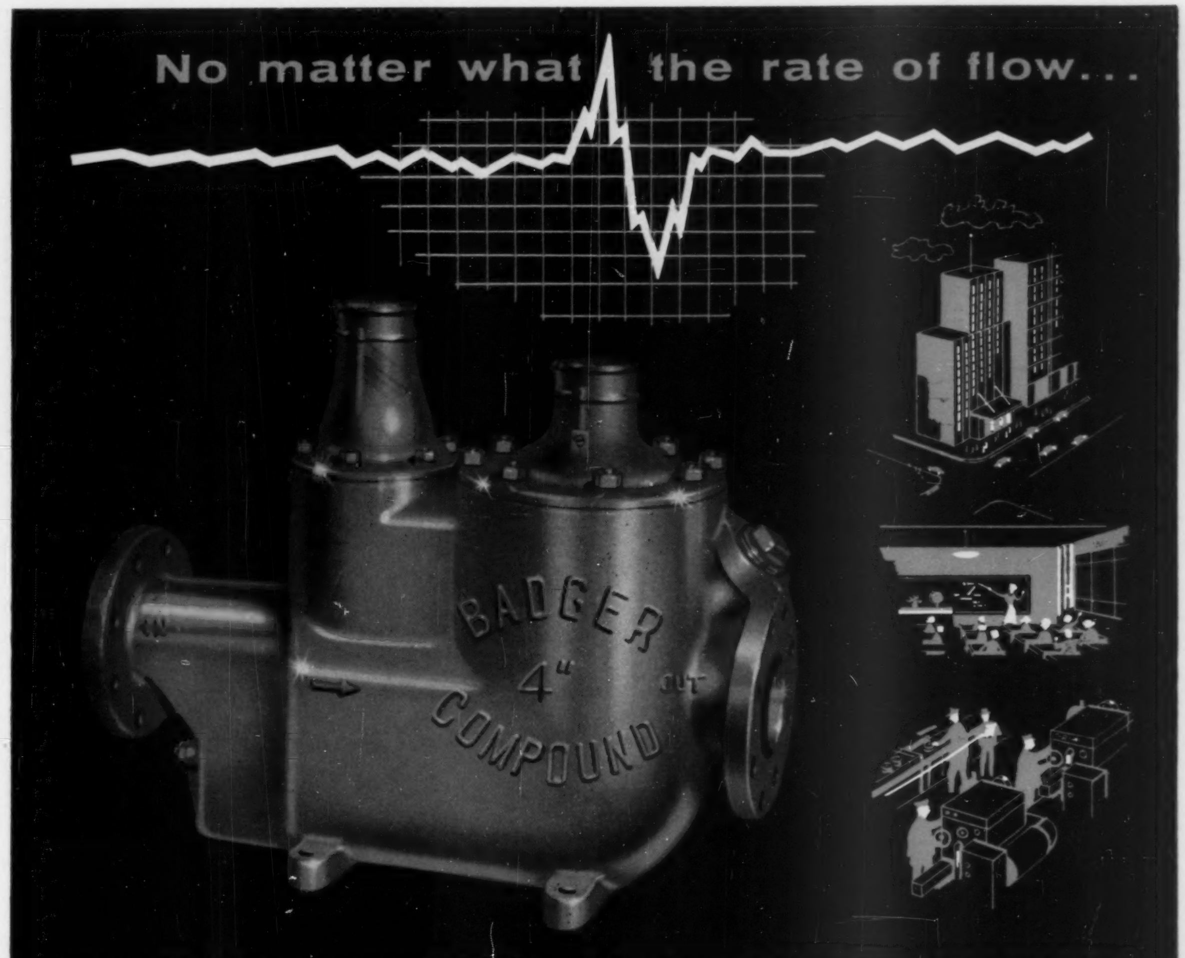
Credit unions are financial self-help groups whose members save their money together and make loans to each other at low cost. Credit unions are chartered by the government and supervised by either state or federal authorities. Credit unions deal only with their members, who must share a common bond of association.

Regular dividends are paid on savings and many credit unions also return to borrowers a percentage of the interest collected, thereby reducing the cost of credit union loans even more. Some 26,000 credit unions serve more than 13,000,000 members throughout the world. Of these 555 serve municipal employees exclusively. Substantially all are members of Credit Union National Association, Filene House, Madison, Wis. ◄◄

Crimes in the First Quarter

Serious crimes increased substantially in the first quarter of 1960, a total of 7% above the 1959 period. Murders, up 11%, showed the sharpest rise. Each of the other two crimes against the person, forcible rapes and felonious assaults with dangerous weapons occurred with 5% greater frequency than in the first quarter of 1959.

A special analysis from 450 cities was made of robbery and burglary since these two crimes against property present the most pronounced seasonal increase during the darker months of the year. This indicates that highway or street robberies constituted 49% of the robbery problem and increased 10%. Business establishments, targets of 36% of the robberies, were victimized 6% more frequently. The rise in burglaries of residences was a sharp 14%. The greatest increase, 19%, involved unlawful entrances of homes during the night to commit a felony or theft. ◄◄



BADGER'S COMPOUND WATER METER ASSURES FULL REVENUE FOR ALL WATER DELIVERED

Wherever water flow rates fluctuate considerably during the day — in schools, factories, hotels, theaters, apartment houses, dairies, laundries — Badger's compound meter assures economical, efficient service.

This compound meter combines Badger's disc and turbine meters to provide accurate registration at all rates of flow. You get the full revenue to which your water department is entitled for water actually delivered.

It is the industry's only compound meter where only one side operates at a time. A patented balanced compounding valve directs small streams through the disc meter, large streams through the turbine side... for accurate measurement of all rates of flow, less wear and longer service life.

Write for complete details now.

Badger Water Meters

BADGER METER MFG. CO. • **4545 W. Brown Deer Rd.** • **Milwaukee 18, Wisconsin** • *Offices in principal cities*

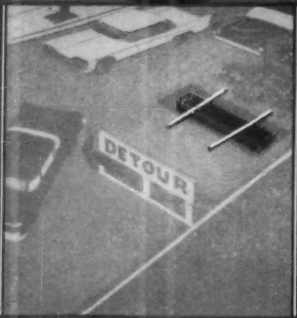
here are 8 reasons why the

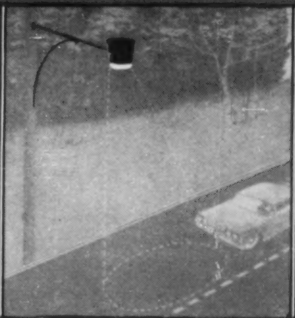
ELECTRO-MATIC

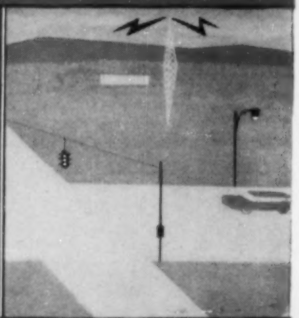
RADAR VEHICLE DETECTOR

solves more traffic signal problems:

TRAFFIC
ACTUATED





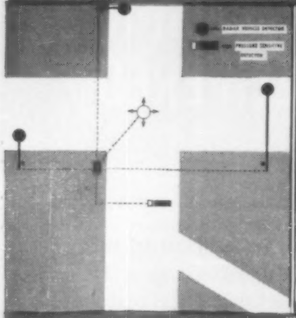


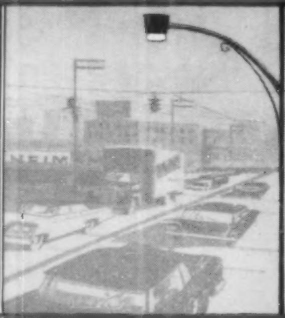
1. Now the new Model RD-2 Radar Vehicle Detector meets requirements of all types of traffic-actuated signal controllers.

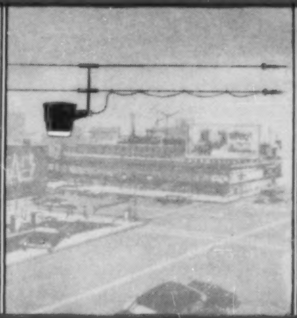
2. Convenient overhead installation eliminates costly, time-consuming excavations and detours encountered with other detectors.

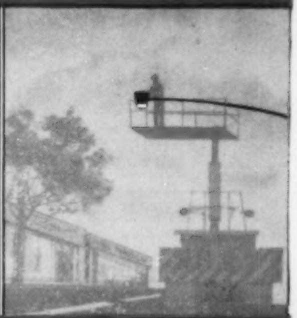
3. Beam width can be adjusted by remote control to cover from one 9-foot lane, up to three traffic lanes as desired.

4. Operation is not subject to traffic wear and is unaffected by parked cars, weather, or extraneous radio interference.









5. New "one car equals two impulses" feature—permits RD-2 to be used in combination with existing pressure detectors on same traffic phase.

6. Radar Detectors may be mast arm mounted on existing wood or steel poles using standard luminaire-type mast arms.

7. Mounted on rigid 2-wire span, one or more Radar Detectors can be suspended in positions difficult for other detectors and mountings.

8. Keeps costs down because of ease of maintenance and removal in the event of roadway changes.

Give your intersections the newest in vehicle detection, and in doing so, save both time and money. Write for Bulletin D-165.

TRAFFIC ACTUATED

AUTOMATIC SIGNAL DIVISION

EASTERN INDUSTRIES, INC. • NORWALK, CONNECTICUT

OUR MUNICIPAL NOTEBOOK

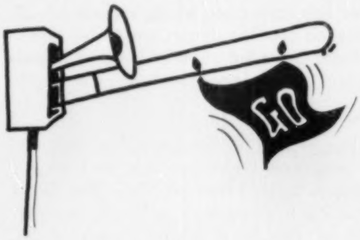
TO "TOP" TREES SAFELY

. . . give your tree men a good, truck-mounted crane, says Harry E. Turner, of the East Orange, N. J., Shade Tree Commission. His crews use an Atlas Boom that insures safety since the climber is tied to the equipment. The boom is made of telescopic seamless tubing that can be extended to a height of 85 feet. In addition to the safety factor, the boom saves a lot of time. With it, the crew can lower a severed limb directly into a truck without having to rehandle it on the ground.

* * *

TROMBONE-ARM TRAFFIC SIGNALS

. . . is the colorful but descriptive label given to lighting standards currently in use in Camden, N. J. While they do not slide, they do have a shape similar to a trombone, and permit extending a traffic light as much as 25 feet out over the street. Mast-arm lighting standards, in use in Denver, Colo., perform a similar function. Both standards are products of Pfaff & Kendall, Newark, N. J.



* * *

FOR CITY-COUNTY COOPERATION

. . . adopt a rule that officials of Stanislaus County, Calif., and the cities within its borders follow regularly—always shake hands after every meeting. The County Board of Supervisors and the mayors of each city, with their managers and administrative aides, meet regularly to resolve mutual problems. Cooperative action, based on better understanding generated by these meetings, has resulted in a number of cooperative projects. A city airport has become an improved city-county airport, with an additional runway. A county-wide master plan has been developed by a special advanced planning staff, with local costs shared by the county and the cities. Other cooperative programs include public health, library and recreation. Projects being planned for city-county financing include a control tower for the airport and a lake-creating dam in the Tuolumne River.

* * *

THE MUNICIPAL WORKHORSE

. . . is a rubber-tired tractor with a front-end loader bucket, according to Max Davenport, city manager, Marysville, Mich. His crews have used the city's Hough Payloader to unload and erect an Armco prefabricated steel warehouse, to change bulbs in lighting fixtures, and to set lighting fixtures in new municipal buildings, as well as to take care of many other duties.

* * *

LEAVES PLUG YOUR CATCHBASINS?

Don't let them. Oberlin, Ohio, saves several thousand dollars a year by picking up its leaves each fall with an American vacuum-type leaf collector. City Manager Fred E. Weisbrod also counts other advantages such as elimination of smoke caused by burning leaves, elimination of property damage from plugged storm drains, and the collection of much other debris from the street by the big blower. Oberlin spends less than $1,000 to collect somewhat less than 400 tons of leaves each fall.

* * *

HEAT FROM INCINERATORS

. . . can be used, if conditions are favorable, to cut refuse disposal costs. Miami, Fla., for example, generates steam that is used in a hospital and to provide power for a water-pumping station. The plant uses six Nichols Monohearth incinerator furnaces each rated at 150 tons per day.

If you want more information on these topics, or any other municipal problems, drop a note to:

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, New York

TO LOWER PARK MOWING COSTS

. . . by a fat two thirds, give your operators the small, fast maneuverable tractor-mounted units. George G. Robinson, executive secretary of the Jacksonville, Fla., Recreation Department, discovered that one International Cub Lo-Boy tractor with a mower can replace three power mowers and three operators. The single tractor not only costs less than the mowers, but requires less gasoline and does not need a truck to haul it around.

* * *

THOSE DISCARDED CHRISTMAS TREES

. . . needn't be a fire hazard. Omaha gathers them into a central pile and burns them in a publicly attended "Operation Skyblaze," supported by various civic service clubs. Omaha's Fire Marshal, T. R. Smith, reports that Omaha has been holding these events since 1954.

* * *

600 GALLONS A PERSON DAILY

. . . probably is the nation's greatest water demand for domestic purposes. But it is the demand that the El Centro, Calif., Water Department must provide. The city lies in California's Imperial Valley where summer temperatures rise above 115° F.

* * *

GROUP LIFE INSURANCE

. . . in exchange for two days of vacation, is the trade made by employees of Englewood, Colorado. The adjustment was part of a comprehensive personnel program installed by City Manager Leslie R. Rudd. ◄◄

Is It Safe? Yes!

Outgoing AWWA President Lauren W. Grayson of Glendale, Calif., looks dubiously at his glass as "Miss AWWA 1960" pours him a drink of Florida water. Meanwhile incoming President C. F. Wertz of Miami, Fla., carefully checks his glass of California water before taking a drink. Behind the participants is a rack of jars containing water from all 50 states, Canada and Mexico, indicating that one can travel to most places in the three countries and be assured of obtaining a safe drink of water, one of our country's most important assets that is too often taken for granted.

Spotchecking the AWWA Conference

To win bond elections

—for new waterworks improvements, Howard J. Sowden urged that the utility manager should be ready to work hard disseminating information to the public for four to six months. He should have a good citizens' committee, composed of leaders in the community, and should present his program through active community groups. Mr. Sowden is manager of public utilities, Fergus Falls, Minn.

Robert S. Millar, manager of the Denver, Colo., Board of Water Commissioners, went further in urging wide publicity to consultant's reports and opinions by other authorities. He also recommended the use of motion pictures in sound and color, aggressive use of newspaper, radio and TV stations, and above all, a long-time record of good service as the strongest base to use when building a campaign.

Agricultural water pollution

—apparently hasn't been solved yet, and can be expected to get worse. So warned C. M. Tarzwell, of the Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio. Chemical fertilizers enrich river and lake water, producing algae problems, taste, odor, filter clogging, color, pH difficulties and increasing dissolved minerals. Pesticides, insecticides, rodenticides, and similar materials have produced fish kills. Moreover, these pollutants cannot be controlled easily because of their widespread application.

Water chemists need upgrading

—argued Chicago's Water Purification Engineer John R. Baylis. For reasons not clear to him, the title of engineer often carries a better salary than that of chemist, even though both do the same work. The complexity of treatment caused by new types of pollution adds to the need for high-grade water chemists, he feels, while automation is reducing the need for personnel trained in mechanics, though this does not apply to technical help.

Water-main breaks

—rarely, if ever, occur because of pipe corrosion. However, Philadelphia's G. E. Arnold finds that they often occur because of changing traffic conditions, particularly in winter when frost penetration transmits surface shock to greater depth. New York's Chief Engineer, E. J. Clark, finds that unequal settlement of soil caused by various utilities and subway structures, frequently causes trouble.

Salt-water encroachment

—is one of the penalities that Floridians pay if drainage canals, constructed to reclaim low-lying land for urban and agricultural use, are not properly regulated. F. A. Kohout, U. S. Geological Survey, has found that salt water has advanced along canals where control dams are located too far upstream to be effective but that salt water recedes seaward along canals where salinity control dams are located effectively.

Sea-water desalting

—now has 200 municipalities asking to participate in a demonstration program. Only five can be selected in the current program authorized by the 1958 Congress, one plant for each desalting process, according to Allen Cywin of the U. S. Department of Interior's Office of Saline Water.

For good ground-water recharge

—to protect well supplies, consider water viscosity. R. T. Sniegocki, U. S. Geological Survey, finds that a drop of 23°F will change viscosity of the water enough to cause a loss of specific capacity of 9.4 gpm per foot of head.

Nassau County's (N. Y.) Senior Hydraulic Engineer, W. Fred Welsch, explained that the use of storm-water recharge basins has been vital to the protection of well supplies in his area where the demand for water and the growth of urbanized areas has been great.

New drinking-water standards

—won't be much different from the old. Omar C. Hopkins, U. S. Public Health Service, feels that there will be almost no change in microbiological requirements, relatively few regarding source and protection, and physical aspects. He expects a number of changes. in the chemical limits.

New water-impounding reservoirs

—don't need to be troubled with taste and odor problems if a few precautions are followed. E. Jerry Allen of the Seattle, Wash., water department, urges the removal of trees, stumps and brush to take away organic and vegetable matter. He also recommends

(Continued on page 27)

From this, we pump tons of water each minute!

75 YEARS AGO, when the town pump was still a flourishing symbol of American life, we began building municipal pumps to provide thirsty populations with water.

Today, the water needs of mighty cities aren't measured in "splashes" . . . but in tons, cubic feet, gallons per minute.

So the town pump has turned into huge hydraulic equipment. But our basic principle of *quality* hasn't changed a bit! Fairbanks, Morse pumps are still the leading choice of local governments—for water works, sewage plants, power plants, public buildings and municipal projects of all kinds.

If it's liquid . . . if it flows . . . we make the pumps that move it . . . in the largest variety of hydraulic applications available *anywhere*.

We also build electric motor and internal combustion drivers, in all sizes. Carefully matched to the requirements of each pump, they assure maximum performance at minimum cost per gallon.

Fairbanks, Morse

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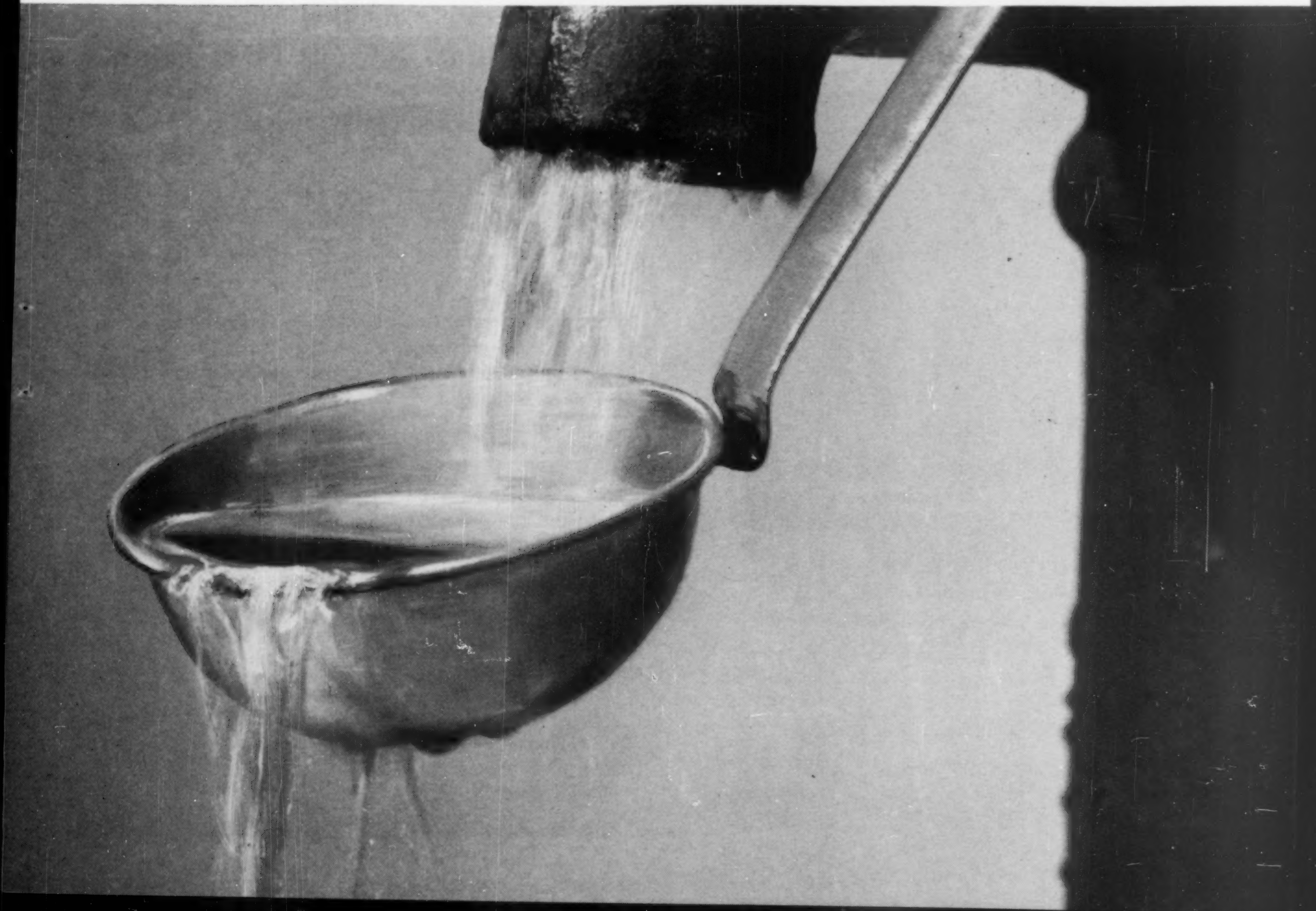

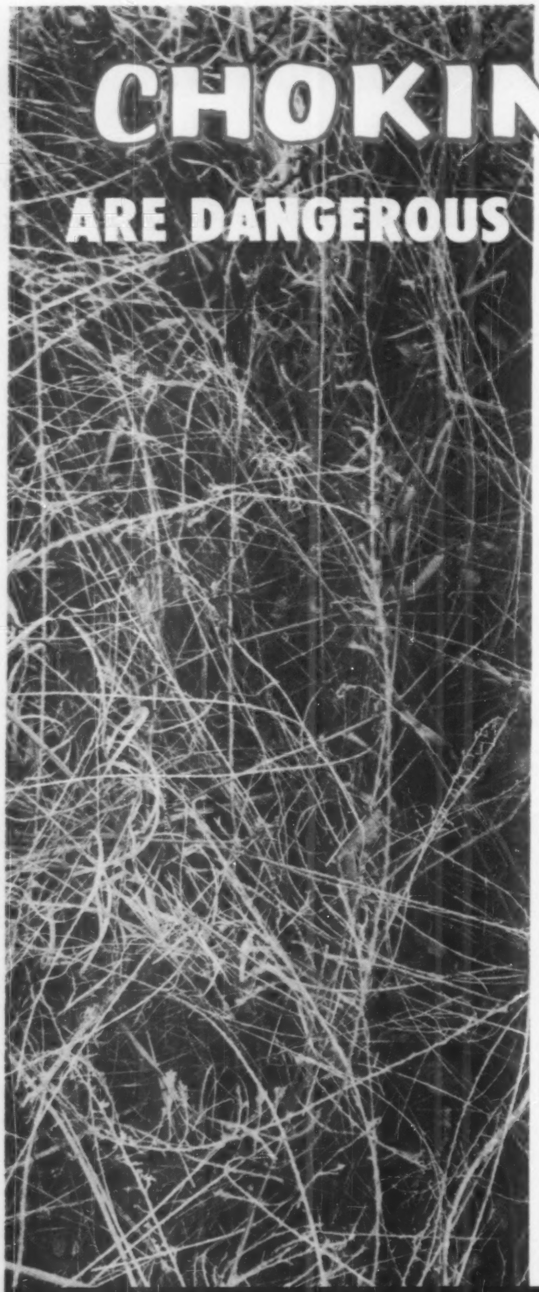

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A spark, a cigarette thrown away, a careless match . . . and you have a brush fire. That's only *one* major hazard of weeds and undergrowth. Just as damaging are the rust and decay of fences, loading docks, rails, and buildings caused by moisture-collecting waste vegetation. Planned chemical weed control with Zep R-59 Weed Killer eliminates these problems.

Zep R-59 is a powerful, fast-acting vegetation killer that is both easy and inexpensive to use. One man working with a sprayer can destroy weeds and grass quickly even in areas that would be difficult or impossible to clear by hand. The action of Zep R-59 is deep and sure, cutting down re-growth of the undesirable vegetation.

You can find out for yourself the effectiveness of Zep R-59 by filling out and mailing the coupon on this page. In a few short weeks a Zep technical representative will call on you for an actual performance demonstration. Mail coupon today!

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KANSAS CITY

(Continued from page 24)

draining shallow pockets in areas to be submerged and warns against promiscuous cutting of trees and vegetative covering in the drainage area. He also found that, when logging debris is burned during a rainy spell, the tars and oils from the smoke are carried into the reservoir and create taste and odor problems, particularly upon chlorination.

To seal joints

—in a concrete water reservoir, plastics and similar sealing compounds have generally replaced the old copper seal. H. Ward Tyler of the Seattle, Wash., city engineering department, has found that a cold-applied two-part polysulphide compound is highly successful.

The two components can be mixed at the site and used immediately. Control of the proportions results in a more viscous mix that can be applied easily on reservoir slopes.

A rubber dam

—across the Los Angeles River has proved effective in diverting runoff water for conservation purposes. N. M. Imbertson of the Los Angeles Department of Water and Power, explained that the dam is a water-filled, reinforced plastic membrane made of neoprene nylon. It will collapse automatically during periods of high water and become reinflated within minutes after flood peaks.

Household detergents

—are interfering with well supplies far more seriously than they are with surface supplies. An indication of this is alkyl benzene sulfonate (ABS), found in household, commercial, and industrial cleansers, and not in any substance of natural origin. The standard water and sewage purification processes remove very little of it. ABS is frequently accompanied by other contaminants which affect taste or odor of well waters. Graham Walton, of the Robert A. Taft Sanitary Engineering Center, warned that since underground contamination is slow to be detected and takes years for correction, preventive measures should be taken.

Reuse of alum sludge

—will be a feature of the Tampa, Fla., water plant, now under enlargement. J. Moran Roberts, of Robert & Co. Associates, consulting engineers, explained that plant-scale tests show savings made possible by this reclamation process. It consists of converting the sludge to aluminum sulphate by adding sulphuric acid.

Administrative manuals

—serve as a guide for simplicity of operation, but in practical application reason and common sense must always take precedence over strict adherence to the written text. However, as pointed out by William D. Hurst, City Engineer and Chairman of Commissioners, Greater Winnipeg Water District, the manuals describe and explain all the organizational and administrative features of the department, overcoming the limitations of staff instruction; and serve as a valuable means of regulating and co-ordinating the operation of the department and functions of the staff.

Elected and installed for next year

—C. F. Wertz, director of the department of Water and Sewers, Miami, Fla., as President of the American Water Works Association. Mr. Wertz was named director of the Miami department in July 1955 after serving for 14 years as resident engineer for Day & Zimmerman, Inc., Philadelphia consulting engineers.

John W. Cramer, Fulton and Cramer, consulting engineers, Lincoln, Neb., was installed as vice-president, and William J. Orchard, Wallace & Tiernan Corporation, succeeded himself as Treasurer of the association. ◄◄

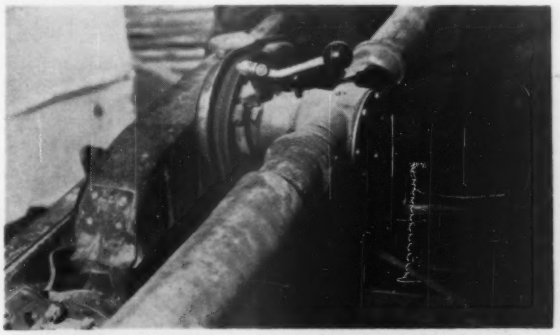
No More "Coffee Can" Meter-Pit Pumping

A coffee can is admittedly simple and doesn't often get out of order, but as a pump it is pretty inefficient; it is hard work too.

We have found that a small pump mounted on the engine of our Water Department service truck can put the "coffee-can routine" of hand bailing completely out of business. It can remove excess lawn water, dry up flooded meter vaults, and empty flooded excavations for street and sewer maintenance crews.

The pump, a Jabsco self-priming mobile unit, is permanently mounted on the truck engine by a simple bracket attachment on the engine block. The only other modification consists of an auxiliary sheave on the fan-drive pulley to provide power to the pump. Just a flip of the pump's engaging lever puts it into operation. The only other equipment needed are two coupled hoses for suction and discharge, which are readily carried on the truck.

Now when excess water gets in the way, the service man or meter reader merely raises the hood of the truck, couples the hoses and engages the pump. It eliminates bailing, or as frequently happened, the need to radio for an additional crew with an auxiliary power pump or a trip back to the city yard.



A simple bracket attachment to the engine block and an auxiliary sheave on the fan pulley is all that is required to mount the small pump.

The Mobile-Pumper Model 2500-01 (1¼" pipe) will deliver up to 3,300 gallons per hour, while the one-inch model 2300-01 handles up to 1,700 gph.

A. C. Swartz
Director of Public Works
Costa Mesa, Calif.

Stretching the long arm of the law in Milwaukee

Milwaukee, Wisconsin — This metropolitan area of over a million is justly proud of its traffic safety record and its police department. In 1959, the city had the lowest fatality record ever achieved by a community over 250,000. Service and maneuverability of its 80 Solos and 37 Servi-Cars are cited as important factors in Milwaukee's effective traffic control program.

OPENING DAY FOR THE BRAVES — It takes only an hour and a half to park approximately 10,000 cars at Milwaukee's County Stadium when officers mounted on Harley-Davidson Solos and Servi-Cars are on the job.

The force that made Milwaukee famous...

moves on Harley-Davidson Servi-Cars and Solos

Mobility is the key to successful law enforcement! Harley-Davidson police motorcycles supply this maneuverability when only minutes count. They stretch the arm of the law to reach any part of the community quickly whether the trouble spot is traffic, crime, fire or other emergency.

Harley-Davidsons *balance* your effectiveness: *Solos* are the ideal pursuit vehicle. Nothing stops these maneuverable two-wheelers from arriving on the scene of trouble . . . fast. Busy *Servi-Cars* are triple-threats for traffic control . . . parking and meter work . . . residential patrolling. Call your Harley-Davidson dealer, or write Harley-Davidson Motor Co., Milwaukee 1, Wisconsin, for free folder on effective police mobility — the Harley-Davidson way.

HARLEY-DAVIDSON
Police Motorcycles

Early-morning preparation of Saginaw's ice-skating rinks puts the ice in top shape for the city's skaters.

Saginawans Skate in the Center of Town

In Saginaw, Mich., we have 27 acres of park, in the geographical center of the city. In this fortunately located recreation area, which we have named Hoyt Park, is a natural bowl considerably below the elevation of the adjoining streets. During the summer, this bowl is alive with softball teams. In the early fall, we see the sport switch to football. In winter we turn it into an ice-skating rink.

We start making the change during the latter part of October by shutting down a 4-inch Chicago storm-water pump with a 400-gpm capacity. This normally removes the ground water collected by a 12-inch sewer running the length of the bowl, lifting it about 20 feet into a nearby sewer. By shutting the pump down, ground-water accumulates during the fall rains, saturating the soil. About November 15, we flood the area of roughly 6 acres with water to depths varying from 6 to 18 inches. This requires anywhere from seven to ten million gallons. Then we wait for the weather man to make the ice skating rink for us.

We need from 3½ to 4 inches of clear ice in order to put the rink into really good skating condition. This thickness is required to support maintenance equipment such as our four-wheel-drive Jeeps with snow plows, and our Fordson tractors with their rotary brooms. We often hook up an ice planer with the Jeep as needed.

Timing plays an important role in keeping the rink in good shape. During favorable skating weather, our crews clean and resurface the rink each night. They start their work so that they can completely remove skate shavings and snow by 4:00 a.m., thus making it possible to resurface the ice when the air temperature is most favorable. They do this by spraying the surface with two 150-foot hose sections generally 1½ inches in diameter supplied by 1½-inch underground lines which connect through two centrally-located floodlight poles.

We apply the surfacing water when the air temperature is between 10°F and 20°F above zero. When the temperature is colder than this, water freezes on the surface before it has had a chance to "level off."

We maintain three separate skating areas on this huge ice sheet; the main skating rink, which is floodlighted and is large enough to accommodate as many as 2,000 skaters comfortably, covers about six acres; and two smaller adjacent areas on either side. The degree of maintenance depends on the skating volume. Toboggan runs and sled slides occupy part of one of the areas.

This, of course, is not Saginaw's only ice-skating rink. We maintain ten others located throughout the residential areas of the city. We build each of them up by the "spray method." These rinks usually are skatable before the Hoyt Park area where water is actually impounded. However, they also become unusable at an earlier date since they have a much thinner layer of ice.

Of course, the number of days of good skating depends on the weather. The winter of 1958-59, which was the best that we have had in several decades, had 64 good skating days. The past season, 1959-60, probably was the most disappointing, with only 13 official days of skating.

EDWARD W. TABAKA
Superintendent of Parks and Cemeteries

Their City Guards its Growth . . .

There's good reason for the confident smiles on the faces of Fire Chief J. Leo Rivard and Mayor F. L. Bergeron of Willimantic, Conn. They know that their city's fire alarm system is adequate and properly maintained.

Willimantic's forward-thinking officials make certain that new fire boxes are added as fast as the rapidly growing city needs them. Protected by the completely automatic Type B Gamewell System, Willimantic has 90 boxes including those on the curb, in schools, hospitals, industrial plants, old age homes, and supermarkets. Alarms are transmitted directly to fire officers' homes as well as to the station. Volunteers are alerted by air horn.

The system has proved itself. When major replacements were necessary in 1954, a broad and intensive study of other types of alarms was made. Unanimous decision of the fire chief, mayor, and board of fire commissioners was that no other system equalled Gamewell for dependability, efficiency, and economy.

Be sure that *your* municipal officials know about Willimantic's positive, economical fire alarm system. A Gamewell Survey will show precisely how your community's protection compares. For complete details on this comprehensive survey, write The Gamewell Company, Dept. 1266 Newton Upper Falls 64, Mass. *A Subsidiary of E. W. Bliss Co.*

Recent New Installations of Gamewell Fire Alarm Systems

- Chester, Penna., Type "A"
- Las Vegas, Nev., Type "B"
- Alexandria, La., Type "B"
- San Jose, Calif., Type "A"
- Tulsa, Okla., Type "A"
- Yonkers, N.Y., Type "A" *(decentralized)*

BLISS Gamewell

FIRST . . . WHEN SECONDS COUNT

1,250-gpm For El Cajon

Big new pumping engine at work in fast-growing El Cajon.

The Fire Department of El Cajon, Calif., has accepted delivery of an American LaFrance triple combination 1250 g.p.m. pumping engine. The deluxe open cab model has full stainless steel and chrome trim, power steering, five-speed full synchromesh transmission and is powered by a 275 b.h.p. Continental-American LaFrance engine.

It is equipped with an American LaFrance 1250-gallon pump; Hale 2-stage high pressure booster pump; four-inch front, preconnected soft suction, 12 feet long; two 2½-inch gated suction inlets, one at the left side and one at the rear; two 1½-inch preconnected rear discharges; two ¾-inch electric rewind high pressure hose reels; and a Motorola two-way radio. The new unit carries 1,600 feet of 2½-inch hose, 600 feet of 1½-inch hose, and 400 feet of ¾-inch high pressure hose.

El Cajon adjoins the eastern boundary of San Diego. From a population of 5,500 in 1950, El Cajon has grown to a city of 38,500, and in the same period its area has increased from 1.6 square miles to 9.8 square miles.

The fire department maintains a headquarters station and two single-company stations. Plans have been approved to replace one of the single company stations, with a modern split level station.

T. R. Parks
Purchaser-Analyst

A Ready Siren Even in Deep Freeze

Rain, and then snow have soaked the fins of a roof-mounted siren. The temperature has dropped to zero. An emergency develops; a patrol car picks up the alarm and whips into the traffic-bound business district—and is trapped by a frozen siren.

This happened too often to Patrolman George C. McDermott of the Seneca Falls, N. Y., Police Department. The village, located less than 30 miles from Lake Ontario, is subject to severe winter weather. Patrolman McDermott found that the combination flasher-siren on his patrol car was often inoperable.

McDermott had for some time used Lock-Ease graphited lock fluid on his car locks to prevent sticking and freezing, and he decided to try the same treatment on the siren.

He reports that the application worked. The siren never failed to respond last winter, even under the most adverse weather conditions. At his suggestion, another police agency tried this graphited fluid with success. All that is required is a few drops applied at least twice every 24 hours during damp and freezing weather.

Lock-Ease fluid is manufactured by the American Grease Stick Co., Muskegon, Ill. ◄◄

Fire Protection for Shopping Malls

A recent trend in municipal development is the establishment of shopping malls in the central or principal business districts of some cities. These malls are areas for pedestrian use only, formed by closing the entire widths of one or more streets to vehicular traffic. The creation of such malls, together with the provision of good parking facilities nearby, is one of the features included by a number of city planners in their redevelopment programs for central business districts.

Buildings facing on the mall will have the same conflagration possibilities as similar buildings fronting on a street. Assistance in connection with the fire protection problems that may arise in the development of a mall can be obtained upon request from the National Board of Fire Underwriters or the local fire insurance rating organization.

As soon as any mall is completed, the fire department should make a series of trial runs into the mall to determine how efficiently the apparatus can be distributed and utilized in the mall area so that plans can be made for fighting fires effectively. ◄◄

City Employment Continues to Rise

Urban areas apparently are continuing to hire more people, just as more of the nation and its booming population turns urban. A recent report by the U. S. Department of Commerce shows that, from October 1953 to October 1959, city employment rose approximately 16%, with payrolls increasing by 49%. Wages for school employees rose 28% for the same period for an average monthly high of $485, while other municipal employees saw their salary checks boosted only 27% to reach an average of $373 per month.

The report states that urban areas employ 1,636,000. Of these, about 20% are part-time, including volunteer firemen and elected officials. Full-time employees are roughly 1,400,000 perons. ◄◄

Originator Abandons Commission Form

Galveston, Tex., the first city to adopt the commission form of government, dropped it recently and adopted the council-manager form. The vote was 5,505 to 4,803. Action for the change was spearheaded by the League of Women Voters that was searching for ways to help its city take part in the general urban growth of the nation. While other cities, particularly in Texas, have experienced stimulating growth, Galveston's population, commerce and industry have been static, notwithstanding its advantage of a great natural harbor. Charges that the commission form had produced mismanagement, not refuted to the satisfaction of the public, also added to the vote favoring a change in the form of government.

Galveston adopted the commission form 60 years ago in an effort to throw off a dominant machine rule. It provided that the public could elect commissioners directly who would run various branches of the city government and have a mandate from the voters to manage the service without interference. While having some theoretical advantages, the difficulties soon became burdensome. Cooperation between departments was hampered, efficiency was difficult to realize, and a log-rolling administrative setup that gave little attention to the best overall interests of the community almost had to be the unfortunate compromise. Moreover, it did not destroy the power of the political bosses. Jersey

(Continued on page 34)

Air Pollution Control Notes

California Health Board Proposes AP Standards

Speaking of automotive exhaust, the California State Board of Health has proposed a "maximum level of air pollution," and standards for motor vehicle exhaust. It is up to the California legislature to enact such standards into law. The recommendations make 0.15 parts of oxidants per million parts of air the highest permissible level. Proposed standards for automotive vehicle exhausts require that the amount of hydrocarbons be reduced 80% and the amount of carbon monoxide be reduced 60%.

Can Air Pollution Bring Disaster?

Air pollution may get worse in this country before it gets better. That was the essence of remarks made recently by Dr. Richard A. Prindle, Chief, Air Pollution Medical Program, Department of Health, Education and Welfare. Dr. Prindle spoke at a symposium at the University of California Medical School. Following are some of the statements made by Dr. Prindle: "As we add more sources of combustion to our urban areas, one cannot help but draw the conclusion that a potential menace exists . . . There is evidence that the over-all problem of air pollution will continue to increase in almost every area of the country over the next few years. A potential for disaster does exist. The disaster can come in the form of an unusual, sudden, acute tragedy, repeating previous episodes, or as a result of long exposure to low or moderate levels of pollution, resulting in biological diffusion of far-reaching consequences."

Free Publications

Three publications of interest to all those in the field of air-pollution control are available now for free distribution. "Standards for Ambient Air and Motor Vehicle Exhaust, Adopted by the California State Board of Public Health," may be obtained by writing to "The Clean Air Quarterly," 2151 Berkeley Way, Berkeley 4, California. The United States Public Health Service has reprinted a series of five articles on air pollution by Morton Mintz, staff reporter for the Washington Post and Times-Herald, which may be obtained from the Service, Washington 25, D. C., or from the nearest Public Health Service office. "A Review of Air Pollution in New York State," through July 1958, has been published by the State Air Pollution Control Board. Requests for copies of this illustrated publication may be sent to Alexander Rihm, Jr., Executive Secretary, New York State Board of Air Pollution Control, 84 Holland Ave., Albany 8, N. Y.

Macon Test

A year-'round test of air pollution in Macon, Ga.—similar to one conducted in that city in 1958—is being undertaken this year. A high volume sampler, located on the roof of a downtown building, is taking 24-hour samples every two weeks. The samples are being forwarded for analysis to the Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio, as part of the United States Public Health Service's Air Sampling Network program. In all, 26 samples, each of 24-hour duration, will be obtained during 1960.

Pennsylvania Law

The first state-wide air-pollution-control law for Pennsylvania has been approved by Governor David Lawrence, who called it "the first major step toward alleviating what is one of Pennsylvania's major public health problems." Under the law, the state Health Department will undertake a one-year study of air pollution, under the supervision of an 11-member state air-pollution-control commission. This study will be used as the basis for the enactment of regulations to combat air pollution. It is expected that controls will vary from section to section of the state.

—Prepared by Kenneth Kowald

Behind the fire fighters...water wells by Layne

Municipal water requirements are as varied as they are vital. The reliability of a water source is foremost when human lives and happiness are at stake.

For over 75 years, Layne & Bowler, Inc. and its associate companies have pioneered and specialized in the development of ground water. Their only concern—their only business is water.

Layne water wells and pumps circle the globe. Various conditions and problems have been met and solved. This know-how, acquired during three quarters of a century of experience, results in efficient, economical wells—the basis of most municipal water systems. Layne wells provide the good beginning.

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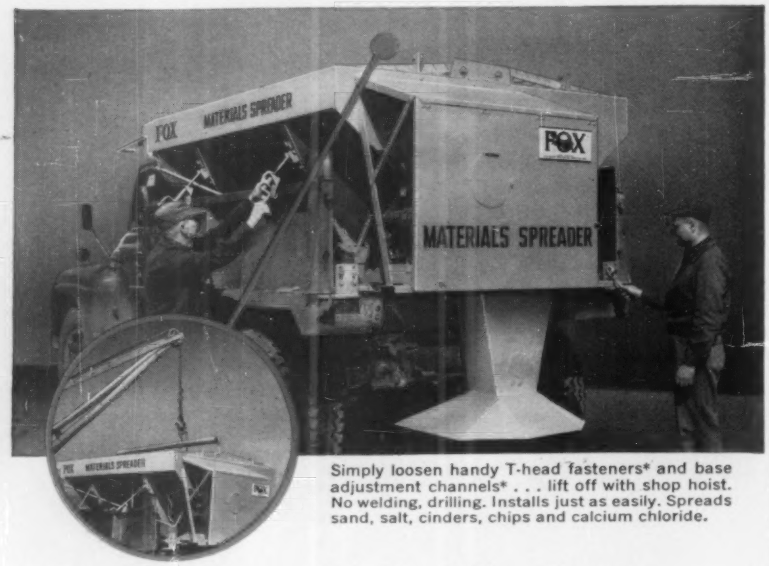
FOX spreader feature No. 1



Simply loosen handy T-head fasteners* and base adjustment channels* . . . lift off with shop hoist. No welding, drilling. Installs just as easily. Spreads sand, salt, cinders, chips and calcium chloride.

Unit on or off in 15 minutes—frees truck for other work

Ever have this problem? It's the middle of winter. Roads and streets have been plowed and sanded. But, there's a lot of snow to be removed and extra trucks are needed. Wouldn't it be great if you could use the sand spreader trucks? But no, they're tied up with spreaders year 'round. Invaluable when streets are icy . . . dogs when the weather is good.

The solution—Fox Mountable Material Spreaders! Four big, heavy-duty models ranging from 5 to 12 cu. yds. And, they install on any standard dump body in only 15 minutes (take 'em off just as fast). It's easy and economical. *You don't tie up trucks unnecessarily.*

You not only save on truck investment . . . but on manpower, too. Spreading with the Fox is a *one-man operation*. Dash-Mounted Electric Controls let him start the 18 H.P. spreader engine from inside the cab . . . set the spreading rate and operate the electric clutch. Heavy-duty auger feeds material to the spinner for a smooth even spread in widths from 8 to 40 feet . . . at any thickness desired, and at truck speeds from 5 to 40 miles per hour. Spreads *under* parked and passing cars, too . . . ahead of rear truck wheels for added traction.

To see all the Fox Features
ASK FOR A DEMONSTRATION

The Fox Materials Spreader will cut your labor, time and equipment expenses to the bone. A catalog . . . case history reports . . . even a no-obligation demonstration are yours for the asking. *Write, call or wire collect for the name of the nearest Fox distributor, who will gladly give you a demonstration.*

* Exclusive Fox patent.

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Dept. R15, 1020 N. Rankin St. • Appleton, Wisconsin • Phone: REgent 4-1451

(Continued from page 32)

City, dominated by the Hague machine, and Memphis, dominated by Crump's, were both commission forms. Nevertheless some 600 cities adopted it before it declined.

Today the council-manager form is the dominant type in cities over 10,000. The latest *Municipal Year Book* shows 562 council-manager cities, 561 mayor-council cities and 212 commission cities. Except for one reversion to the commission plan (Ottumwa, Iowa, in 1960) there have been no new adoptions of the commission plan since 1947. Nearly 1,700 municipalities in all population ranges use the council-manager type.

Boom Times Are Bad Times for Town And County Clerks

The decade ahead is expected to outstrip the fabulous fifties in home building, plant construction, population increase and other factors.

Rejoice? Perhaps all, with the exception of city, town and county clerks. Good times bring increases in the flow of documents for their understaffed offices to record, reproduce, file and store.

For example, an oil boom near here last year created a sizeable problem for our office and there was widespread lease activity throughout the county.

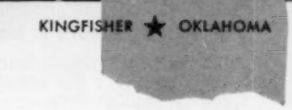
When the volume of business handled by the County Clerk's Office more than doubled, it was decided to purchase a Photostat Corporation Recorder machine. Although it represented a fairly sizeable item in the budget of a county this size, we had to have it.

The Photostat Recorder has the advantage that it reproduces signatures on original instruments, so that they stand up in any court.

With the Recorder we were able to render two- to three-day service on the recording and indexing of legal documents, compared with ten days to two weeks under the old system.

An instrument to be recorded is placed in the machine and one side photographed on a linen ledger sheet. The operator then turns the sheet over and the opposite side is photographed. Then the sheet is automatically developed, washed and dried in one minute. It takes five typists at top speed all day to equal this.

R. C. Green, *Clerk*
Murray County
Sulphur, Okla.



Superior's low fuel oil consumption is measured here by (left to right) Clarence Garrett, Plant Supt., A. B. Reese, Jr., White's Chief Field Engineer, and V. V. Long, Engineering Consultant, Kingfisher, Okla.

Civic thrift at Kingfisher prompts Superior Engine purchase

Kingfisher, an Oklahoma wheat belt town of 3700 population, is proud of its low municipal taxation. Earnings from the city-operated power plant pay most local operating expenses and finance periodic improvements and expansion to the plant itself. As usual, city fathers were both cautious and thrift-minded when a new engine-generator was needed recently. Their choice was a Model 80-GDSX-8 dual-fuel supercharged Superior which develops 1769 BHP at 360 RPM, to drive a 1250 KW generator.

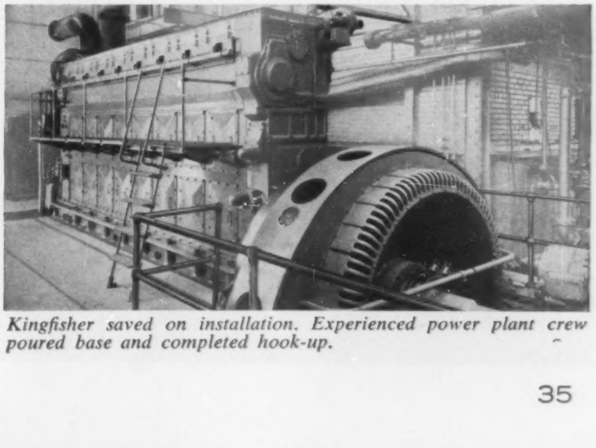
Today many municipalities are making a "Superior decision"! Superior's highly developed open chamber combustion system is combined with a series of exclusive design developments and refinements to produce high power-to-fuel ratio. Diesels can run on a wide range of non-premium fuels including residuals, and dual-fuels operate on natural or manufactured gas, butane, propane or sewage gas. Even after extremely long periods of low-maintenance operation, replacement parts are seldom needed.

Superior's complete line of diesel, dual-fuel and gas engines range from 190 to 2150 HP, or 150 to 1500 KW. Get full information today by writing to:

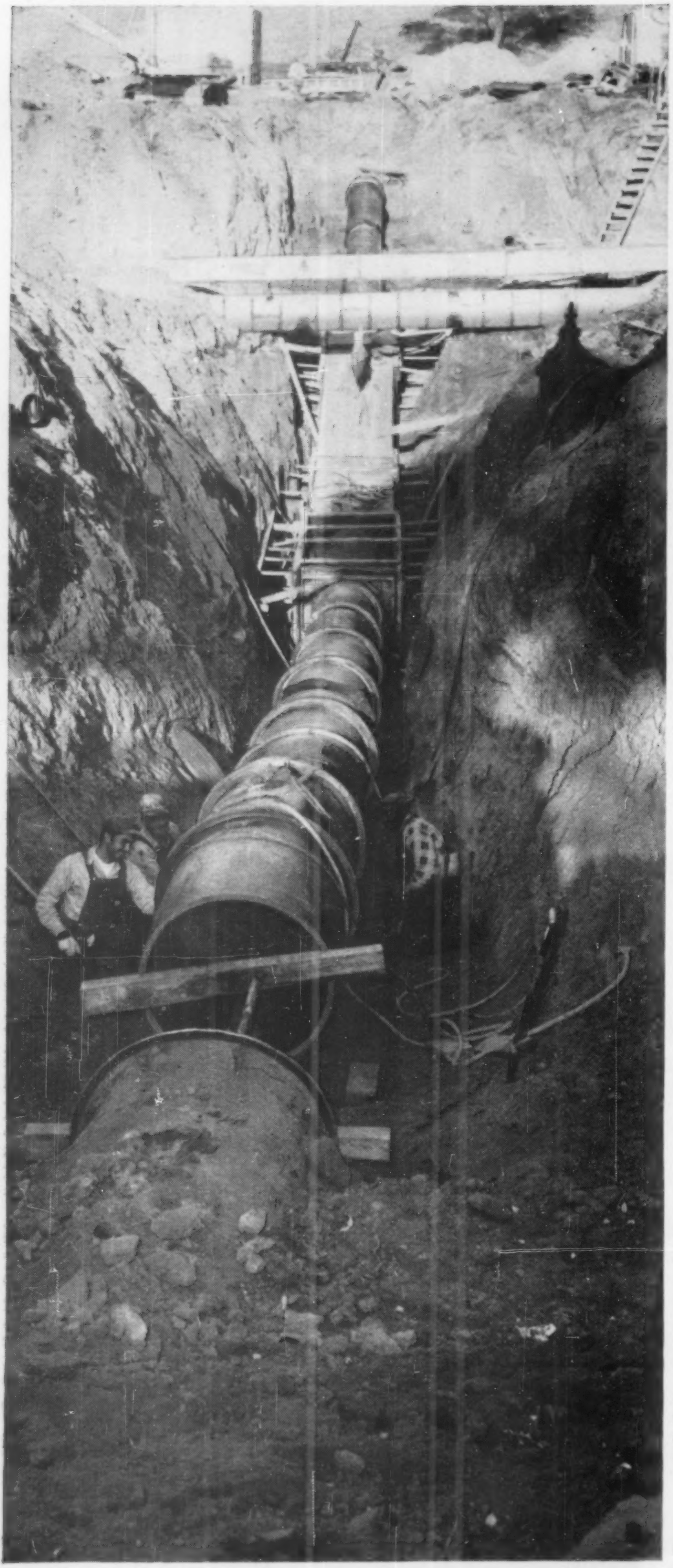
Superior ENGINES ATLAS Imperial DIESEL ENGINES White DIESEL

White Diesel

WHITE DIESEL ENGINE DIVISION
THE WHITE MOTOR COMPANY
Plant and General Offices: Springfield, Ohio



Kingfisher saved on installation. Experienced power plant crew poured base and completed hook-up.



DON'T BE FOOLED BY INITIAL PIPE COSTS...

Certain factors concerning the type of pipe to be used for a proposed water or gas project must be examined carefully:

First
—how much does the pipe cost, compared to other types?

Second
—how often will it require repair?

Third
—how long before it has to be replaced?

After all, how much money do you really save if you buy the cheapest pipe . . . then have to repair it frequently . . . and *then* have to replace it within a decade or two?

You save with cast iron pipe

Sometimes the first cost of jobs where cast iron pipe is specified, is higher than similar projects using cheaper pipe. Yet, in the long run, cast iron pipe costs *less!* Here's why:

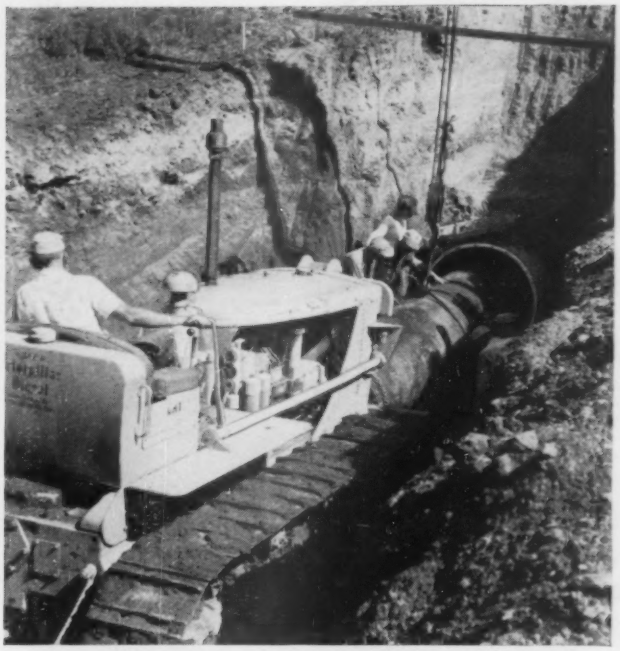
- Cast iron pipe rarely requires repairs. Its rugged construction, corrosion-resistant qualities and bottle-tight rubber-ring joints will withstand the most severe pressures. Once an investment is made in cast iron pipe, it is usually your first and last cost because of the absence of maintenance or repairs.
- Cast iron pipe is built to *last*—98 American cities will testify to that. They've had cast iron pipe installations in constant use for over a century! In fact, in Versailles, France, they're still using cast iron pipe water mains that were laid in 1664! Once cast iron pipe is in the ground, it stays there!

Don't be fooled by "low-cost" pipe. Insist on the pipe that will actually save you money over a period of years . . .

In Nebraska—Here a section of cast iron pipe is being relocated. Twenty-five years old, the pipe is still in excellent condition—has never required major repair . . . or replacement.

Rely on CAST IRON PIPE

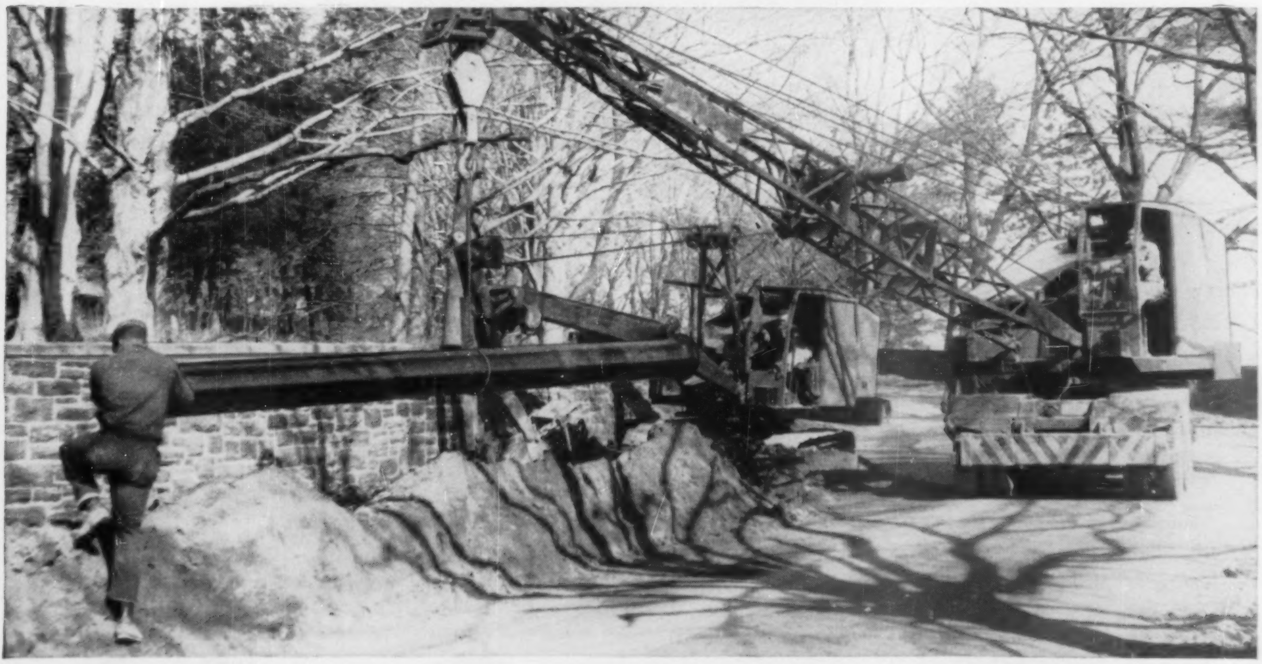
In Indiana (above)—"All-weather" cast iron pipe is quickly installed despite wet trench conditions. Slip-on joints were easily assembled, with one workman using a crowbar.



In Kansas (above)—36" cast iron water main. Another part of this main was floated out of its trench by a heavy downpour. Later a 150 psi water test revealed no leaks in the slip-on joints!

In Pennsylvania (below)—This 16" cast iron pipe is being installed as fast as the trench hoe can prepare the trench.

Handy lengths and slip-on joints make cast iron pipe easy to handle, even in crowded neighborhood sectors; require less labor.

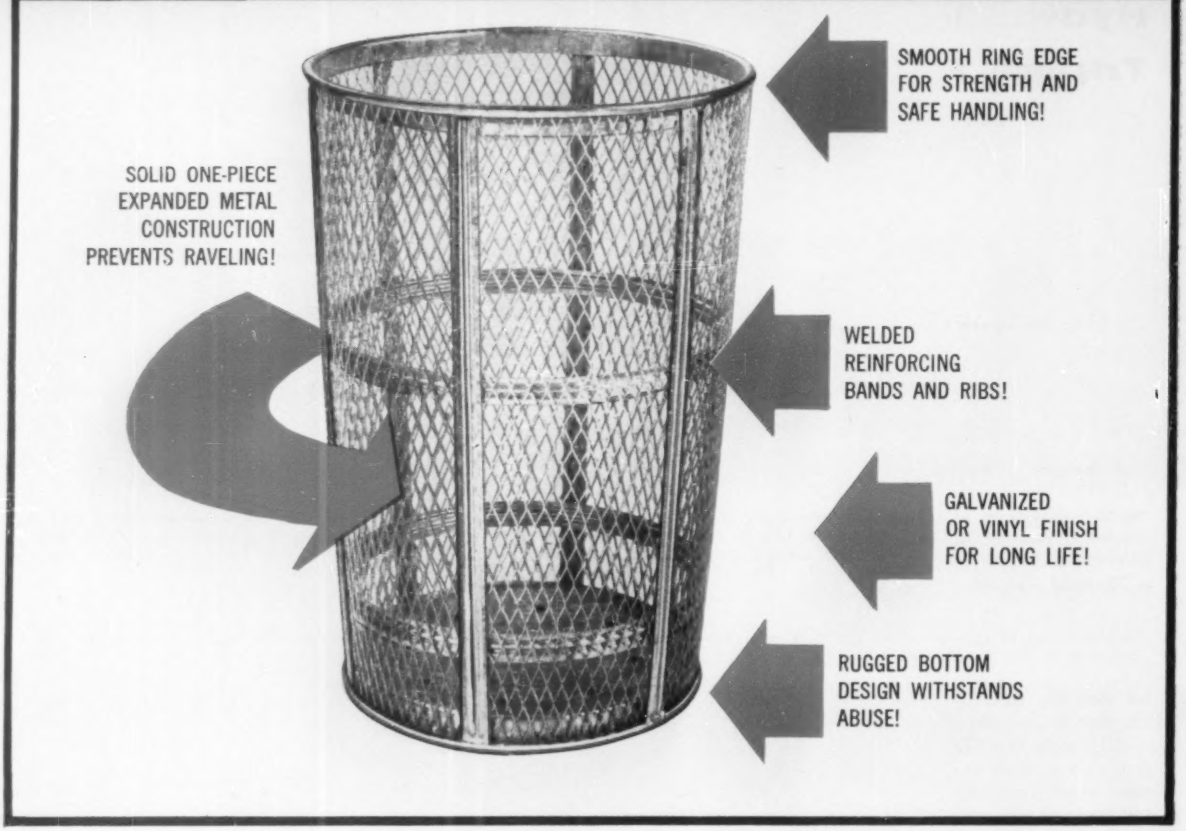


CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

Cast Iron Pipe Research Association,
Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois

WHEELING REFUSE CONTAINERS



SOLID ONE-PIECE EXPANDED METAL CONSTRUCTION PREVENTS RAVELING!

SMOOTH RING EDGE FOR STRENGTH AND SAFE HANDLING!

WELDED REINFORCING BANDS AND RIBS!

GALVANIZED OR VINYL FINISH FOR LONG LIFE!

RUGGED BOTTOM DESIGN WITHSTANDS ABUSE!

Lasts and lasts!

Here's the rubbish basket that keeps on serving long after most others are gone! That's because this Wheeling Expanded Metal Rubbish Basket has *all* the advantages shown above. More than that, it has an attractive open mesh that actually encourages its use.

Wheeling is ready to serve you with America's most complete line of galvanized ware. Get the full story this week from your Wheeling distributor, warehouse or sales office. Wheeling Corrugating Company, Wheeling, West Virginia.

WHEELING CORRUGATING COMPANY · IT'S WHEELING STEEL!

Immediate delivery on all stocked items from these warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis.* Sales Offices: *Atlanta, Houston.*

Other Wheeling Products for Municipal use include:

Utility Basket is light, yet strong. Easy to carry. Extra handy for collecting all types of litter.

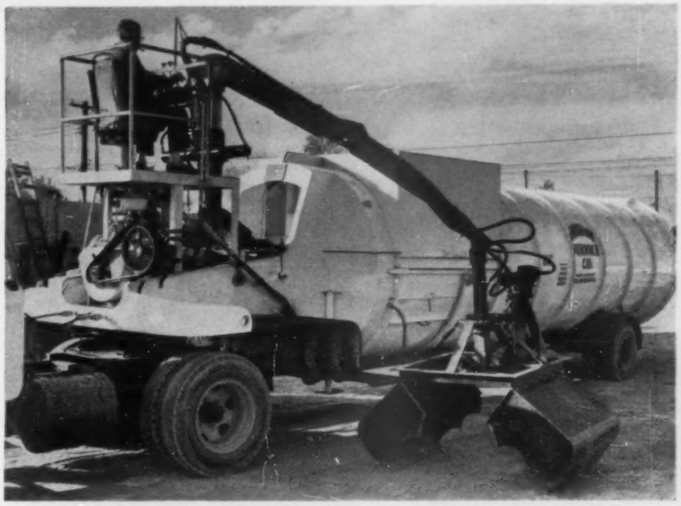
Heavy-Duty Mop Bucket has tough, birch rolls, large foot-pedal and positive - pressure wringer.

Heavy-Duty Pail is made of heavy-gauge steel so it can withstand continuous, extra-rough use.

Heavy-Duty Can has no rivet holes to cause rusting ... gives both strength and economy of steel.

Swing Door Cover with heavy-duty can is ideal container for indoors or out. Large door openings.

Hydraulic Loader Triples Refuse Collection



The operator sits above the power unit and gets a full view of the pick-up and loading operation.

A packer truck with its own loader enables a collection crew to pick up about three times as much rubbish in a day as compared to hand-loading methods. The combination unit, owned by the Garbage Service Company of Phoenix, Arizona, consists of a 32-yard Pak-Mor semi-trailer and a hydraulically operated clam shell. A Hercules four-cylinder engine provides power for the packing plate and the clam shell, which is designed to swivel a full 360 degrees.

Employed for both industrial and residential collection, the unit handles all types of material from regular household waste to shrubbery and tree limbs.

Although the Garbage Service Company operates only one of the combination units at present, it uses approximately 55 pieces of equipment to serve between 65,000 and 70,000 residences in the Phoenix area on a twice-weekly collection schedule. The company also maintains its own landfills for refuse disposal and shops for the servicing of equipment employing approximately 150 persons full time. ◄

This hydraulically operated clamshell handles all types of rubbish with ease and speed, permitting any collection crew to triple its daily volume.

Jane Addams, World Renowned Social Worker, Also Sanitation Inspector

Not enough people know that Jane Addams, the founder of Hull House and a woman whose work in relieving human misery is world famous, also is an unofficial patron saint of the street and garbage departments. This year marks the 100th anniversary of her birth and the beginning of a lifetime of ceaseless effort for universal human rights and social justice that made her the first American woman recipient of the Nobel Peace Prize.

In 1889 she founded Hull House, one of the country's first social settlements, in a Chicago slum. Here the people disposed of their garbage by sweeping it into the nearest gutter.

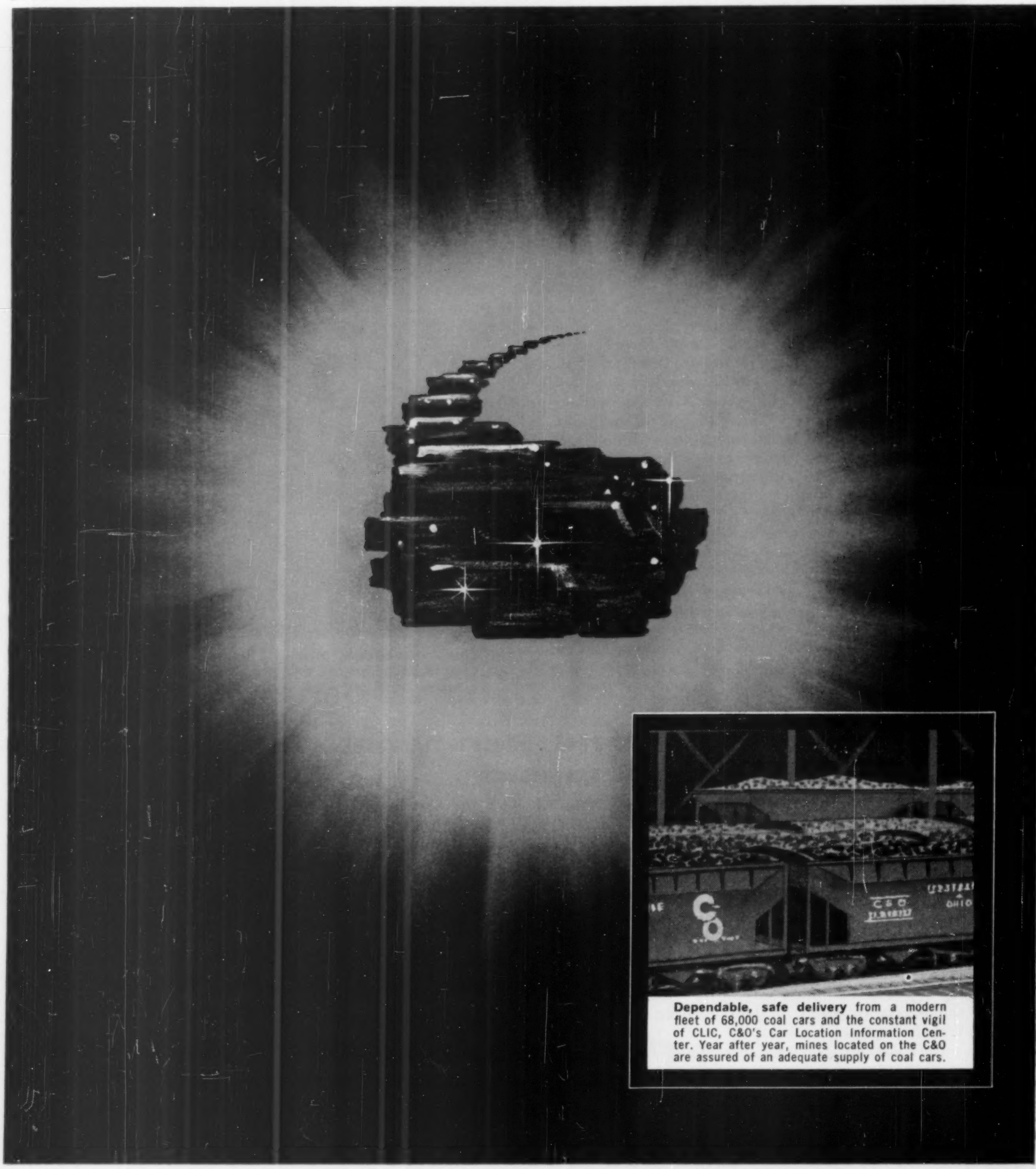
Jane Addams educated her neighbors to the wisdom of garbage containers but unfortunately collection in that area was so infrequent that the containers soon overflowed into the street and the reeking odor of decaying refuse remained in the air. After unavailing complaints to City Hall, she finally applied for and was granted an appointment as 19th Ward Garbage Inspector at a salary of $1,000 a year. She earned it.

Leaving Hull House at 6:00 a.m. daily, she followed malodorous garbage wagons to prevent overfilling and droppage, visited dumps, and prosecuted landlords who failed to provide proper garbage receptacles.

This routine brought to the 19th Ward a previously unknown degree of cleanliness. One street in particular was a triumph. Records showed that this street had been paved, but there was no evidence of pavement anywhere. Miss Addams got a man to dig a hole into the street; eighteen inches down he struck pavement. The covering was refuse. A personal visit from the Mayor confirmed this unbelievable condition and action was soon taken to correct it.

Although her post as a garbage inspector was minor in a life of national and international achievements, it made a significant milestone in the history of street cleanliness. ◄◄

REDISCOV



Dependable, safe delivery from a modern fleet of 68,000 coal cars and the constant vigil of CLIC, C&O's Car Location Information Center. Year after year, mines located on the C&O are assured of an adequate supply of coal cars.

ER COAL!

COAL IS CERTAIN – available for centuries in quality and quantity

In Chessie's coal basin alone, the tremendous recoverable reserves point out the basic good reason for coal's steady growth in utility, metallurgical and industrial markets. For coal is certain—the one fuel offering a stable, economic supply for *centuries, not decades.*

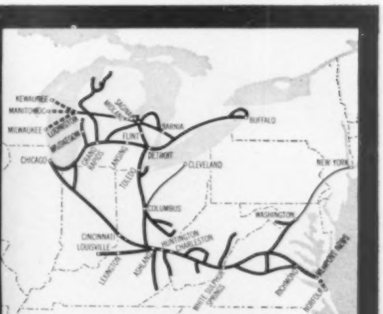
Today's mines, and tomorrow's, are rich in high quality bituminous coal . . . economically available through modern mechanized mining technology . . . transported dependably and at low cost by Chesapeake & Ohio . . . capable of producing peak BTU efficiency in advance-design combustion equipment.

It will pay anyone faced with the problem of modernization to *rediscover coal* in terms of reliability, economy, efficiency, and convenience. Today, or centuries from now, there will be ample supply to outlive the life span of the finest combustion plant.

Chesapeake and Ohio Railway
Terminal Tower • Cleveland 1, Ohio
Outstandability in Transportation

Coal is clean as well as economical for modern institutional heating. Advancements in handling and combustion equipment, electrostatic precipitators and other devices to prevent air pollution make coal the ideal fuel.

C&O Fuel Service Engineers offer free consultation in C&O's market areas on any problem of combustion, application, equipment or plant arrangement. Write to: R. C. Riedinger, General Coal Traffic Manager, at the address above.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MUSKEGON
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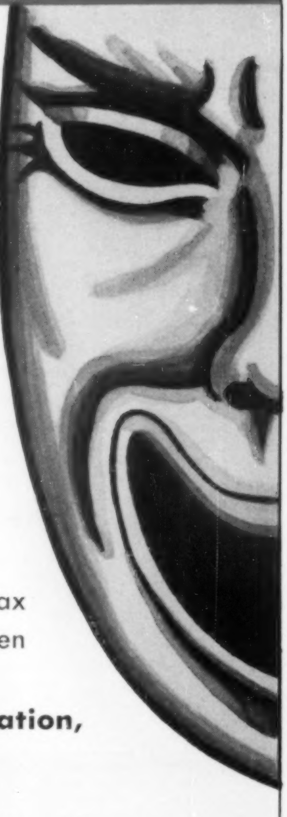
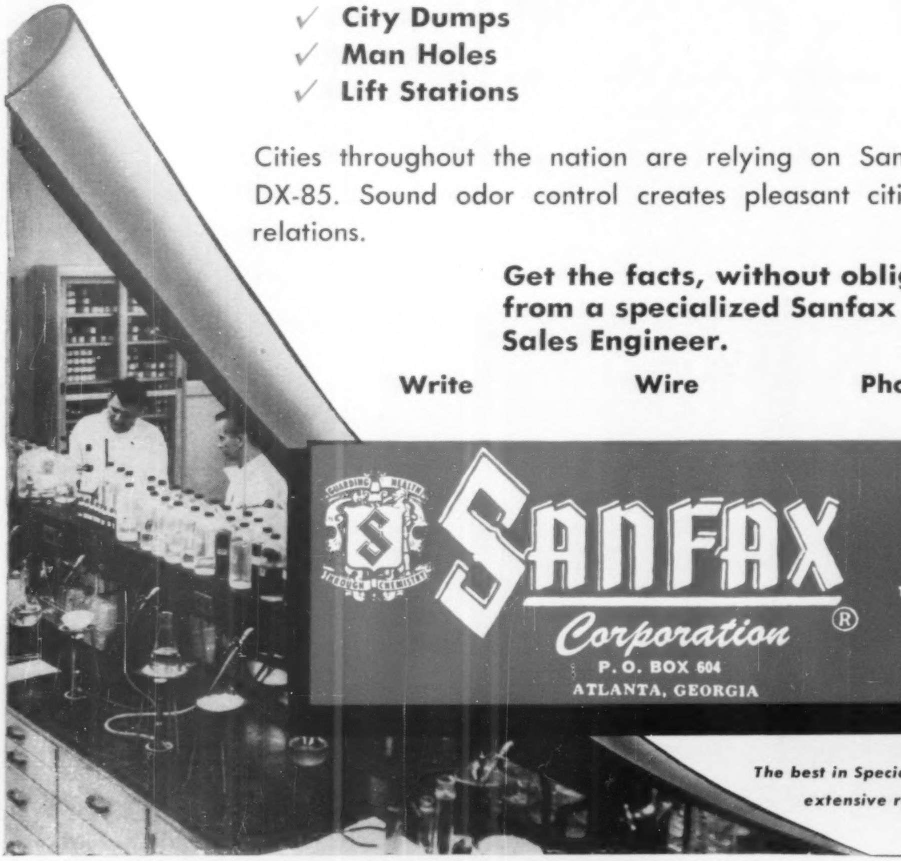
NEWPORT NEWS
NORFOLK

Chessie's 5100-mile Route directly serves over 300 fine bituminous coal mines. C&O's vast coal operation includes transshipping terminals at Presque Isle at Toledo, Ohio and Newport News on Hampton Roads, Va.

CHESSIE SERVES THE COAL BIN OF THE WORLD





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SANFAX DX-85

...your best odor control insurance

Sound odor control builds public goodwill

Sanfax DX-85 combats objectionable odors at the source in . . .

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Cities throughout the nation are relying on Sanfax DX-85. Sound odor control creates pleasant citizen relations.

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The best in Specialized Chemicals . . . through extensive research and quality control.

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 51.

Tractor Replacement Parts

507 Machined to exact original equipment specifications, Lempco tractor replacement parts interchange perfectly with original equipment. They are designed to save time and money, and are guaranteed to equal or excel original equipment. The catalog "Let's Talk Track Facts with Lempco Engineers" gives the full story; write LEMPCO AUTOMOTIVE, INC., 5446 DUNHAM RD., BEDFORD, OHIO.

Prevents Damage of Buried Water, Sewer Lines

508 ALLEN, TREMPER & SMITH, INC., WATERMAN, ILL., have developed a permanent underground color detecting system to eliminate costly damage and breakage to underground placements, fittings, cables and pipe, so often caused by fast-moving excavating machinery. It is called Quick-Find.

Hand Lamps, Flares for Emergency Use

509 Current literature, available from U-C LITE MFG. CO., 1063 W. HUBBARD ST., CHICAGO 22, ILL., describes many types of Big Beam emergency lights, barricade lights, hand lamps and flares for emergency use by police and fire departments and municipal crews.

Reduces Meter Reading Costs

510 Water departments will find that the Read-o-Matic outdoor meter-register system will enable them to reduce meter-reading costs and increase efficiency. The key is accessibility, which eliminates costly, time-consuming call backs. For literature, write BADGER METER MFG. CO., 4545 W. BROWN DEER DR., MILWAUKEE 23, WIS.

Protects Blacktop Surfaces

511 MAINTENANCE, INC., WOOSTER, OHIO, announces illustrated *Bulletin* L-1828A, which describes Vynatex 23, a new colored coating that protects asphalt pavements against oil drippings, weather, freeze-thaw damage and water penetration and is suitable for indoor and outdoor use.

Elevated Steel Water Tanks

512 A new 20-page illustrated brochure describes a wide selection of PDM steel tanks engineered and fabricated for water storage applications. Tables and diagrams show capacity, diameter, head range and number of columns. For a copy, write PITTSBURGH-DES MOINES STEEL CO., NEVILLE ISLAND, PITTSBURGH 25, PA.

New Synthetic Broom Fiber for Street Sweepers

513 On-the-job operating data shows brooms filled with Prostran polypropylene bristles able to clean 2,000 to 3,000 gutter miles of streets without requiring refill. Bend recovery rate provides superior brushing action; sweeping efficiency remains unimpaired in all weather conditions. For literature, write E. B. & A. C. WHITING CO., BURLINGTON, VT.

Lays Curb Faster

514 A larger Stephens-Canfield heavy duty automatic curber now enables you to lay wider, higher compaction curbs at speeds up to 12 feet per minute without forms. It uses either concrete or asphalt mix and extrudes a dense curb section that requires no hand finishing. For literature, write POWER CURBERS, INC., P. O. BOX 1465, SALISBURY, N. C.

Turns 'Em On and Off

515 The Lamplighter photoelectric street lighting control has a plastic cover and base for dielectric strength. It fits all standard receptacles. For the other advantages, write ACME WIRE CO., UTILITY PRODUCTS DIV., DEPT. MP-3, NEW HAVEN 14, CONN.

Fine-Combs Beaches

516 From LOCKWOOD GRADERS, GERING, NEBR., comes literature on a self-propelled unit designed to bring new efficiency to beach cleaning. It is called the Beachcomber and features a 66-inch picking apron. Moving under the surface of the sand to a depth of 1 to 6 inches, it gathers debris ranging in size from cigarette butts to items 12 inches in diameter.

Earthboring Machine

517 Installation of pipe and conduit becomes a smoother operation when the Earthworm underground boring machine goes to work. It bores up to 250 feet in length, up to 6 inches in diameter, and 500 feet on one gallon of gas. For information bulletin, write EARTHWORM BORING MACHINE, INC., P. O. BOX 1100, 1415 14TH ST., SANTA MONICA, CALIF.

Wall-Mounted Smoker's Urn

518 This attractive unit is ideal for use in public buildings. It can be mounted in a 9½" x 8¾" wall area, is quickly emptied, easily cleaned, and reduces janitorial upkeep because it is mounted. For literature on Urn No. 202, write THE F. H. LAWSON CO., CINCINNATI, OHIO.

Meets All Compaction Requirements

519 Seal coat, base course, subbase, or subgrade or fill—the self-propelled, variable-ballast Duo-Pactor combines both steel and pneumatic rolling to efficiently do all compaction jobs, at a saving up to 75% in compaction time. For literature, write SEAMAN-GUNNISON DIVISION OF SEAMAN CORP., P. O. BOX 3025, MILWAUKEE 18, WIS.

Outdoor Lighting News

520 A new program introduced by General Electric offers customers unusual service on outdoor lighting systems and a way to get more light per dollar expended. It is called Preferred Lighting. Descriptive and application data is given in "Preferred Lighting Designer's and Buyer's Guide GEA—7100," available from GENERAL ELECTRIC CO., SECTION D460-02, SCHENECTADY 5, N. Y.

Steel Water Reservoirs and Standpipes

521 This new 20-page bulletin describes the function of ground-level, water-storage structures in municipal and private water distribution systems. Well-illustrated, it includes specifications, standard capacities and maintenance recommendations. For a copy, write CHICAGO BRIDGE & IRON CO., ADVERTISING DEPT., 332 S. MICHIGAN AVE., CHICAGO 4, ILL.

It's Geared for Tough Work

522 *It* is the rugged, powerful Galion Model 160 motor grader, which does all types of blading and scarifying work and is said to have the most push power at the blade of any grader its size. Attachments for bulldozing, snowplowing and scarifying augment its usefulness. For complete specification literature, write THE GALION IRON WORKS & MFG. CO., DEPT. A-70, GALION, OHIO.

Dual Valve Plunger Pump

523 This pump is designed to provide positive, continuous pumping of sludge and slurry, regardless of large solids in the sludge. *Bulletin* No. KSP-3 points out that it has exceptionally thick wall castings with 35,000-pound psi tensile strength. For other facts, write KOMLINE-SANDERSON ENGINEERING CORP., PEAPACK, N. J.

3-in-1 Tool

524 Powerful derrick, two-man aerial lift, mobile hydraulic digger—that's the Truco Turret Derrick, which is described in a 16-page illustrated bulletin giving specifications. For a copy, write TRUCK EQUIPMENT CO., 3963 WALNUT ST., DENVER 5, COLO.

Prefabricated Plastic Sweeper Brooms

525 You are guaranteed more sweeper miles per dollar when you equip your street sweeper brooms with long-wearing water repellant Radax SR plastic filament or Tynex nylon. They are balanced and uniform throughout. And there are no cores to buy. Catalog literature gives details; write RYNAL CORP., DEPT. D., 114 JOSEPH ST., ARCADIA, CALIF.

2-Wheel Sweeper Transport

526 A fast, safe and easy method of loading and transporting small street sweepers and other equipment to the job site—one which pays off in reduced labor costs and lower over-the-road expenses—is described in literature on the Wonderlift Trailer, available from SELMA TRAILER AND MFG. CO., P. O. BOX 120-AC, SELMA, CALIF.

Truck-Mounted Cranes, Shovels

527 By writing to "QUICK-WAY" TRUCK SHOVEL CO., DEPT. 6, 2401 E. 40TH AVE., DENVER 5, COLO., you can obtain up-to-date information in booklet form on three family groups of soundly-balanced, smooth-operating truck shovels in mobile crane design. You'll find there's a capacity rating to fit your job and budget.

(See page 44 for more Bulletins)

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 51.

Improvement in Cathodic Protection

530 A development by ELECTRO RUST-PROOFING CORP., 30 MAIN ST., BELLEVILLE, N. J., brings automation to cathodic protection against corrosion, making necessary adjustments in current applied automatically. This Automatic Potential Control can be adapted to existing cathodic protection systems as well as to new ones.

Asphalt-Adhesion Agents

531 ARMOUR INDUSTRIAL CHEMICAL CO., DIVISION OF ARMOUR AND CO., 110 N. WACKER DRIVE, CHICAGO 6, ILL., makes available two valuable booklets on this subject. One, *Special Report* No. 1, thoroughly discusses cationic asphalt emulsions; the other, Redicote, Armour's asphalt adhesion agents, and includes important test data.

New ½-Ton Roller

532 Ideal for use on parking lot and driveway jobs, for rolling greens and tennis courts, and for preparing new lawns and maintaining turfs, this new unit sells for less than $500. It works close to curbs and has a tight turning radius. For details, write GENERAL ENGINES CO., INC., U. S. ROUTE 130, THOROFARE, N. J.

Trailer-Mounted Leaf Collector

533 The Leaf Loader puts leaf and litter removal on a low-cost basis. It hitches to any truck, blows leaves and debris sucked up through a fixed snout or flexible rubber intake hose into the bed of the towing unit. Flexible discharge hose allows maneuvering of truck and leaf loader during operation. Literature from GOOD ROADS MACHINERY CORP., MINERVA, OHIO, tells the whole story.

Plastic Sewer Pipe

534 This pipe complements asbestos cement sewer pipe in many sewer systems. It has excellent flow characteristics and permanently tight joints. Technical bulletins give full facts on High-Impact Styrene-Alloy Sewer Pipe. They are available from KEASBEY & MATTISON CO., DEPT., 570, AMBLER, PA., from which detailed and illustrated information on asbestos cement sewer pipe can also be obtained.

Reflective Traffic Signs

535 *Catalog* 65A covers the complete line of traffic signs offered by CATAPHOTE CORP., TOLEDO 10, OHIO, manufacturers of reflective traffic control products. Included are stop signs, sign posts and mounting accessories, steel and aluminum warning signs, speed and movement signs, school signs and reflector signals.

Prestressed Concrete Water Tanks

536 *Bulletin* T-22 considers the features of prestressed concrete water tanks in terms of maintenance, construction cost, service life, overall cost to the community—and points out that 75% of construction cost is spent locally. For a copy, write THE PRELOAD CO., INC., 355 LEXINGTON AVE., NEW YORK 17, N. Y.

Standby Electric Plants and Controls

537 . . . is the title of an 8-page illustrated booklet, designed as a guide to the selection and installation of these units. It will also serve to acquaint you with the diesel and gasoline units manufactured by D. W. ONAN & SONS, INC., 2515 UNIVERSITY AVE., S.E., MINNEAPOLIS, MINN.

Versatile Power Mower and Leaf Mulcher

538 The TR Series mowers, designed with the operator in mind, and for low maintenance costs and trouble-free operation, have great traction and hill climbing ability, conform to uneven contour of ground, trim easily around posts and other obstructions. The driving unit can be used as power source for snow plow or blower, and other attachments. Write DEVERE CO., RACINE, WIS.

Sturdy Metal Waste Receptacle

539 There's a well-designed and properly sized Superior waste receptacle to fit both your indoor and outdoor needs, and to help you reduce cleaning costs. For descriptive catalog literature giving full facts, write JOHN WOOD CO., SUPERIOR METALWARE DIVISION, ST. PAUL, MINN.

Lighting Standards

540 Are your files up to date on the Kerrigan line of octagonal-shaped steel and aluminum lighting standards? If not, you'll probably want to send for a free 70-page catalog that will give you all the engineering facts. Write KERRIGAN IRON WORKS CO., NASHVILLE, TENN.

(See page 50 for more Bulletins)

Dependable PARCOA Off-Street Controlled Parking

FLEXIBLE OPERATION
These control types give you a choice of individual or combination of controls to fit your needs.

CODED CARD-KEY for cars parking on monthly or reserved basis.

COIN OPERATION for controlled transient parking.

TICKET ISSUING SYSTEM for merchants restricted free parking service.

TIME-DATED TICKET DISPENSER for automatic self service in merchant participation parking.

The Solution to Your Parking Problems . . . Automatically
Lower Cost—Higher Revenue

Before you consider any other method of controlling off-street parking—investigate Parcoa! Make a careful comparison between Parcoa equipment and other parking controls. Note, for example, the low initial cost of Parcoa and the high costs of meters . . . Analyze maintenance problems . . . 2 gates means 2 points of service . . . 1 collection point . . . 50 meters means 50 points of service and 50 points of collection.

Parcoa permits parking to continue day and night, *smoothly, safely, quickly*, without interruptions, confusion or overcrowding.

Here is an automatic system designed by skilled engineers for operating simplicity, low first cost, low operating cost . . . an investment that actually pays for itself. Parcoa offers 100% collection . . . ease of maintenance. Hundreds of satisfied customers in industry, hospitals, schools, business and municipalities have proved the dependability and efficiency of Parcoa equipment.

Investigate Parcoa—learn the many benefits and advantages . . . It may be the solution to your parking problems, too . . . Write today for Bulletin No. 580.

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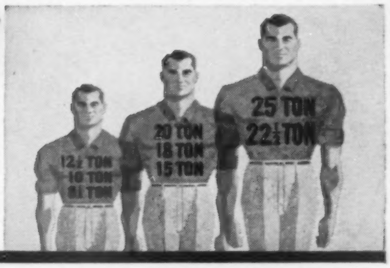
Only **"QUICK-WAY"**® Starts at the Top with 3 BASIC MACHINES



same heavy duty **UPPER WORKS** *in every model* *of each group*

STEPPED DOWN ratings accomplished by proper carriers, smaller engines... LIGHTER COUNTER WEIGHT

Always sound balance, fast smooth operation in every model

'Quick-Way's" 3 FAMILY GROUPS incorporate the latest proven designs and structure so essential in heavy duty truck mounted machines. The structure and design of each model IN ALL 3 GROUPS are so arranged with the proper type and size carriers that balance and low center of gravity is individually engineered into each separate unit. With the exception of carriers, engines, counterweights and variations in application of single or tandem hook rollers, with or without anti-friction bearings, all models in each family group have the same heavy duty UPPER-WORKS as used in the highest rated capacity of the group. As a result there is a "Quick-Way" with a capacity rating to FIT YOUR JOB and YOUR BUDGET.

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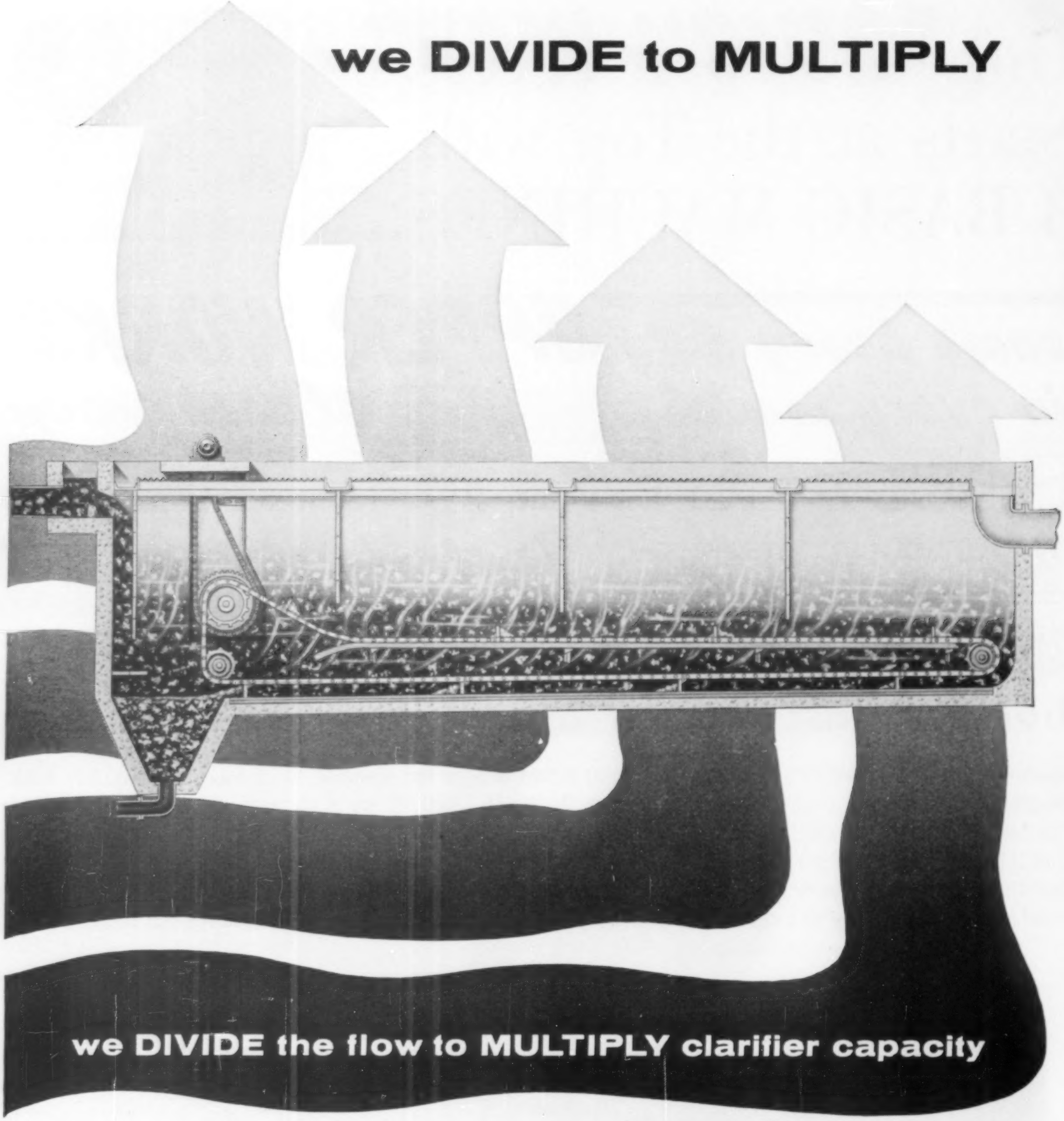
we DIVIDE the flow to MULTIPLY clarifier capacity

Rex Verti-Flo not only increases the clarifying capacity of tanks up to four times; it provides a far clearer effluent. The savings in equipment and construction costs are obvious. Here's how Verti-Flo does it: The unique design of Rex Verti-Flo Clarifier transforms the conventional horizontal-flow tank into a vertical-flow tank...utilizing the *full volume* of the tank and *minimizing short-circuiting*. This is accomplished by a system of collecting troughs, weirs and partitioning baffles which divide the large, horizontal settling zone into a series of small, vertical-flow cells. To assure maximum flow length and control, the weirs are adjustable entirely around the periphery of each cell.

Installed in existing tanks, Verti-Flo can be at least double the capacity of the tank...in new installations, Verti-Flo provides up to four times more capacity so that smaller basins can be used with considerable savings in both equipment and construction costs.

For information, write CHAIN Belt Company, 4648 W. Greenfield Ave., Milwaukee 1, Wis.

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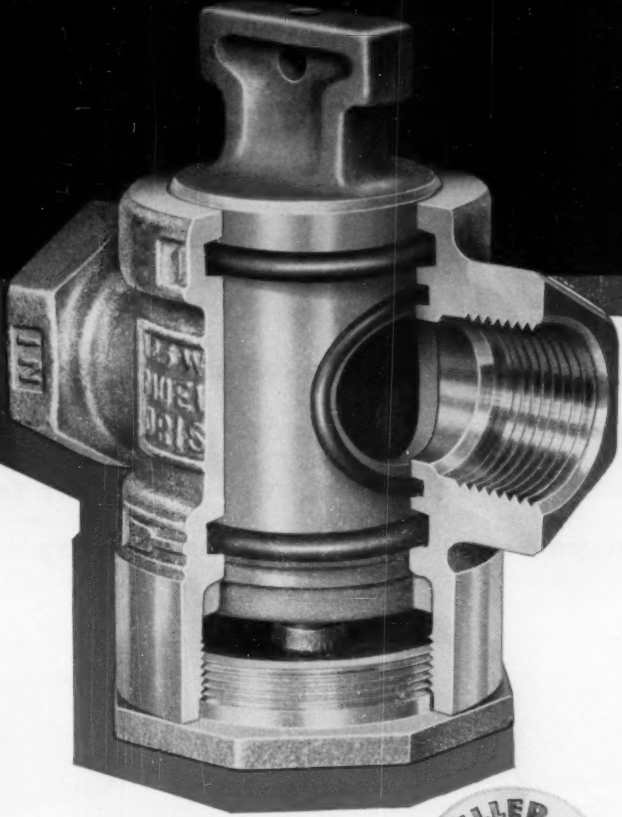
VALVE

THE IDEAL CURB VALVE



LEAKPROOF
pressure sealing "O"-rings provide positive sealing without mechanical seating device.

PERMANENTLY LUBRICATED
Teflon-coated straight plug eliminates periodic maintenance.

EASY TURNING
2″ valves at 125 p.s.i. pressure easily operated with 12″ wrench — even after prolonged idleness.

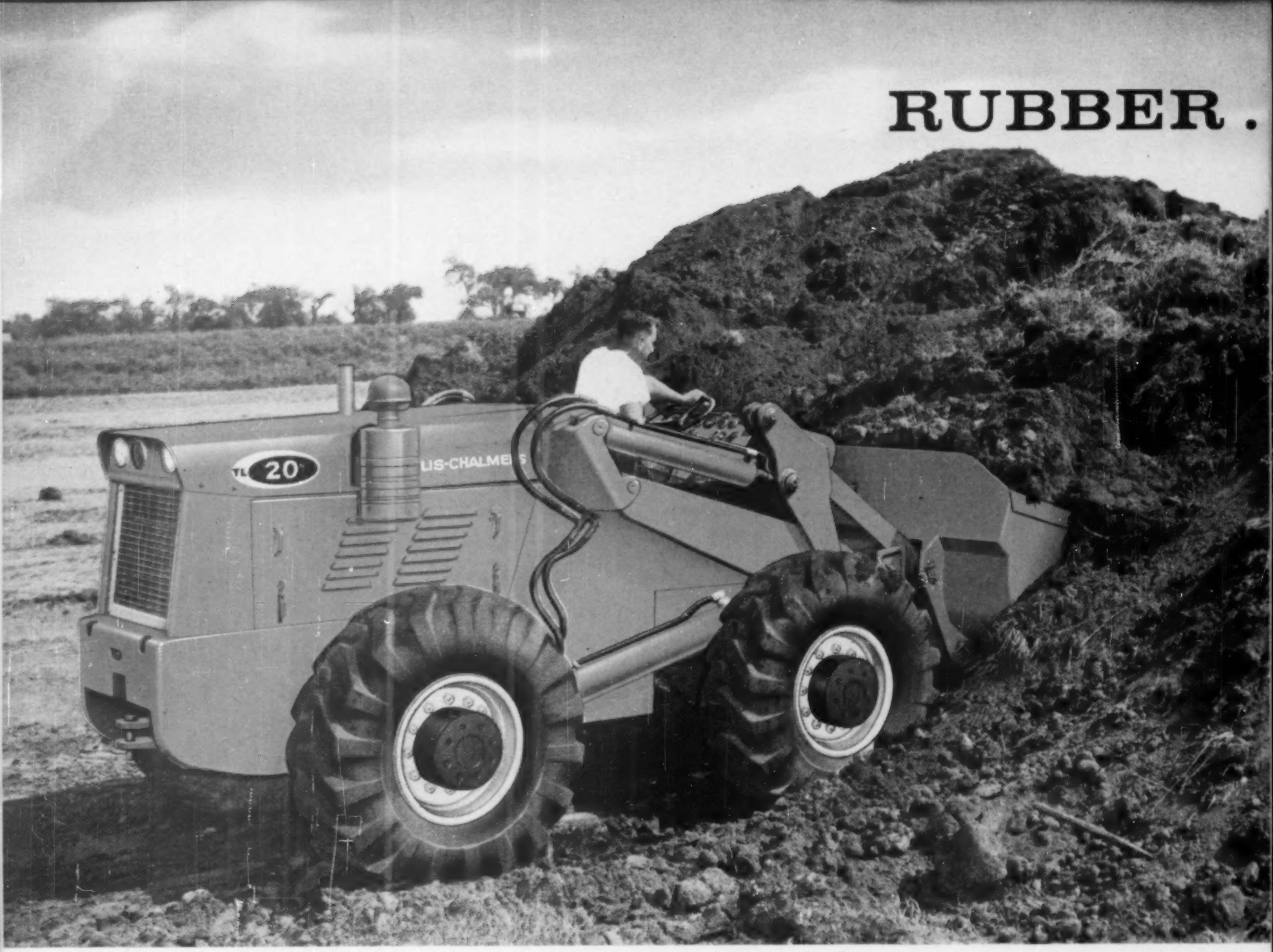
PROVEN
20 years of laboratory tests, 12 years of field tests . . . survived 45,000 openings, closings without leaking, changing "O"-rings, or greasing!

See your Mueller representative or write for additional information on the IDEAL curb valve.

MUELLER CO. since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario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RUBBER .

CHOOSE FROM THE WORLD'S

Allis-Chalmers has the machine that best fits your material handling needs . . . 4 tractor loaders and 4 tractor shovels—ranging from 1 to 7¼ cu yd . . . 72 to 225 net engine hp.

TL-12
TL-14
TL-16
TL-20

4-wheel drive tractor loaders — 76.5 to 130 hp — each with a family of buckets to choose from.

. OR TRACK

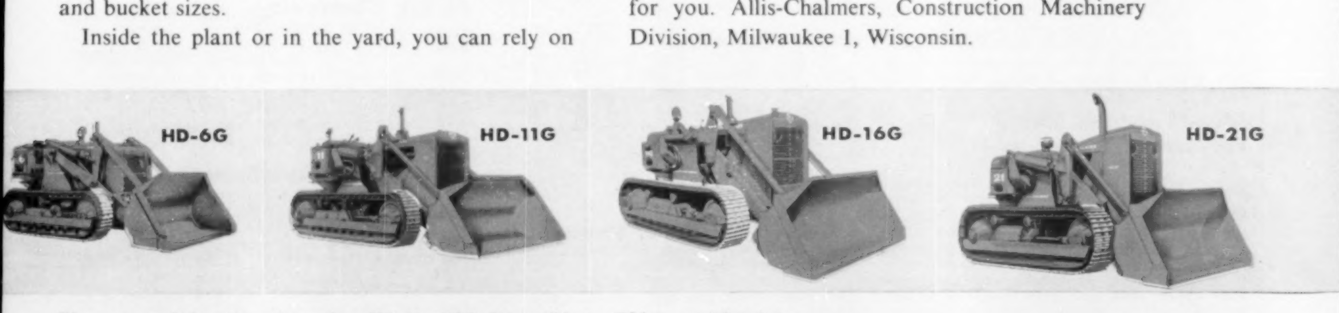
6G
ALLIS-CHALMERS

MOST COMPLETE LINE

Allis-Chalmers offers you the world's most complete line of tractor shovels and loaders on the market today. *On Rubber*, you choose from 4 loader models ranging in power from 76.5 to 130 hp; in capacity, from 1 to 5 cu yd. *On Track*, Allis-Chalmers tractor shovels are available from 72 to 225 hp, 1½ to 7¼-cu-yd capacities. All models offer a variety of buckets and bucket sizes.

Inside the plant or in the yard, you can rely on Allis-Chalmers loaders to help you solve your material handling problems. All models benefit from design, construction and operating advantages that come from Allis-Chalmers' experience as the industry's leading builder of tractor shovels and loaders.

From one source—your Allis-Chalmers construction machinery dealer—get the loader that's best for you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.



Big, rugged tractor shovels—72 to 225 hp—1½ to 7¼-cu-yd buckets.

move ahead with **ALLIS-CHALMERS** A-C

...power for a growing world

Here is Your Opportunity to Improve Conditions in Your City

These free catalogs will supply many new ideas for municipal money saving.

Write to address given or circle corresponding number on free post card on page 51.

Newly Designed Tow Sweeper

541 A 3-wheel chassis and 100-inch wheelbase give this powerful Hyport tow sweeper the shortest radius of any sweeper. The unit attaches quickly to any type tractor or truck, is light in weight, easy to handle and is driven by a 15-hp Wisconsin engine. For literature, write LITTLE GIANT PRODUCTS, INC., 1550 N. E. ADAMS ST., PEORIA, ILL.

Space-Saving Centrifugal Pumps

542 WEIL PUMP CO., 1530 N. FREMONT ST., CHICAGO 22, ILL., announces a new bulletin—VKY-6900—showing a complete line of vertical design centrifugal pumps for hot and cold water circulating applications and water supply booster service. Pumps are designed for continuous operation and with capacities to 600 gpm and heads to 110 feet.

Fibres for Your Street Sweeper Brooms

543 These top quality fibres for street sweeper and gutter brooms are readily available at competitive prices. They include flat steel wire, Palmyra stalks, African bass, and split hickory. FLO-PAC FIBRES, INC., 1501 4TH AVE. SO., MINNEAPOLIS 4, MINN., can provide you with details. And ask about street brooms, too.

Variable Pitch Blade Mower

544 Fence row or lawn, weed-grown roadside, brush and bramble patches—the Roof VP mower keeps all in trim. Powered by a rugged Kohler K161 engine, it cuts a clean 26-inch swath. Time-saving attachments convert it into a riding mower, leaf mulcher, or 20-inch tree saw. For descriptive literature, write ROOF MFG. CO., PONTIAC, ILL.

Compact Chlorinator of Swimming Pools Improved

546 FISCHER & PORTER CO., 505 JACKSONVILLE RD., WARMINSTER, PA., reports that three important design features have been incorporated into its 1960 Model Super-C chlorinator, a low-cost unit designed for the safe and dependable addition of chlorine gas to swimming pools. Descriptive literature, available from F&P, tells the whole story.

Weeds Out Weeds

546 How? Just send for the new 1960 52-page brochure published by FENCEPAINTER DIVISION, 4911 SOUTH RACINE AVE., CHICAGO 9, ILL., and you will learn all about Weed Out.

Simplified Lime Slaker For Water Treatment

547 A new simplified pugmill-type lime slaker, introduced to the waterworks field at the recent AWWA meeting in Miami Beach, has a single shaft with only one water-lubricated bearing. It requires only one motor to drive it, reducing power requirements and further simplifying operation, and incorporates continuous grit and vapor removal as well as a compact control console. For literature, write B-I-F INDUSTRIES, INC., 345 HARRIS AVE., PROVIDENCE, R. I.

Right-Angle Pump Gears Provide Reserve Power Source

548 Numerous municipalities use these right-angle gear drives to protect their water supply, sewage and flood control operations against power failures, and to permit the overhauling of electric motor or power unit without interrupting service. Engineering catalogs will provide you with full facts; write JOHNSON GEAR & MFG. CO., LTD., 8TH & PARKER STS., BERKELEY 10, CALIF.

Colorfast Surfacing for Pre-Finished Exterior Sign Type Plywood

549 A plastic impregnated surfacing material, which comes in green and white, may be laminated to one or both sides of a sheet of regular high density plywood to create a long-lasting, colorfast plastic surfaced plywood that requires no further finishing. Called Kimpreg 8000, it is approved by the Douglas Fir Plywood Assn., and is a development of KIMBERLY CLARK CORP., NEENAH, WIS.

Kills Unwanted Brush Fast

550 Nonvolatile, nondrifting Fence Fire kills brush and undesirable vegetation quickly, completely, getting at the roots. Safe for grass, it is economical to apply, and can be used in conjunction with a roadside sprayer. For details, write THE GLEDHILL ROAD MACHINERY CO., GALION, OHIO.

Rugged Water Coolers

551 By keeping drinking water pure, cool and crystal clear, these galvanized, corrugated steel units will help eliminate "down time" at the job site. They are available in capacities of 1½ gallons to 25 gallons, with cup dispenser and truck-mounted rack. For full facts, write HORTON EQUIPMENT CO., P. O. BOX 2611 HOUSTON, TEXAS.

Pneumatic Fly Ash Disposal

552 A new 4-page technical report, *Fact File* ER-49-3, explains how automatic handling of fly ash enabled the Sewaren Station of Public Service & Gas Co. (N. J.) to sell over 4,000 tons of the material in one year. Step-by-step handling of the material from precipitators to storage silos and system for separating saleable ash from unsaleable are shown. Write FULLER CO., CATASAUQUA, PA.

Avoid Mosquitoes

553 By writing to the SANITARY CHEMICALS DEPT., ROHM & HAAS CO., WASHINGTON SQ., PHILADELPHIA 5, PA., you can obtain complete information on heat-stable Lethane 384, a most effective mosquito knock-down agent for fogging applications, which can be used alone, with DDT or with malathion.

2-Cubic-Yard Street Sweeper

554 An 8-page illustrated bulletin gives general specifications, construction features and operating principle, and accessories for the Wayne 200, an efficient 2-cubic-yard street sweeper that works well in confined, congested areas. For a copy write WAYNE MFG. CO., 1201 E. LEXINGTON AVE., POMONA, CALIF.

Root Cutter-Sewer Cleaner

555 In just 30 seconds this unit can be adjusted to fit any sewer from 8 to 30 inches. It cleans the entire wall, top, sides and bottom, cutting and removing roots and caked sediment. For a new descriptive catalog, write EXPANDING SEWER MACHINE CO., 108 E. WALNUT ST., NAPPANEE, IND.

Non-Clog Sewage Pumps

556 These pumps are designed to assure efficient, economical and dependable operation and service. And there is a type for every service. *Bulletin* 1850.2 details the non-clog wet pit models; *Bulletin* 1850.5 describes the non-clog dry pit, submersible non-clog and horizontal and vertical non-clog models. Write PACIFIC PUMPING CO., 9301 SAN LEANDRO ST., OAKLAND 3, CALIF.

Faster Trenching and Loading

557 Case's new 530 Utility backhoe-loader cuts trench 14' deep; digs 16¾' from pivot; loads any size truck, swings 180°, drives anywhere up to 18 mph. Its front-end loader applies 3700-pounds breakway, dumps with over 9' clearance. It can be purchased outright or is available on long-term lease. For details, write J. I. CASE CO., DEPT. G1560, RACINE, WIS.

Flexible Gaskets for Sewer Lines

558 Data brochures on quick-coupling, leak-proof, acid-resistant Tylox gaskets, in either rubber or neoprene, for any type of concrete pipe sewer line are now available from HAMILTON-KENT MFG. CO., 427 W. GRANT ST., KENT, OHIO. Just specify whether you're interested in gaskets for lines using T & G, B & S, offset, or recessed pipe.

Self-Contained Soil Compactor

559 The versatile Rapak is designed to reduce the cost of tamping foundations, pipe lines, sewers, concrete slabs, black top patching and utility lines. Its rate of blows per minute are adjustable from 400 to 6000; assures proctor density of 95% to 98%. Power source is a 3-hp, 4-cycle engine—and there's a tamping shoe for every job. For literature, write RACINE HYDRAULICS & MACHINERY, INC., RACINE, WIS.

For Controlled Feeding of Dry Chemicals

560 Complete catalog data on a dependable, low-cost, efficient method of feeding dry chemicals to water and sewage treatment systems can be obtained from SYNTRON CO., 430 LEXINGTON AVE., HOMER CITY, PA., manufacturer of Vibra-Flow dry feeder machines, which enable closer control of material flow.

Ends Odors—Free Sample

561 Plagued by odor complaint problems? Ozene will help, for it masks odors while attacking their causes, and can be used in sewage plants, drainage ditches, incinerators, refuse cans and trucks, etc. Application is quick and economical. For specific information and free test samples, write SOLVAY PROCESS DIVISION, ALLIED CHEMICAL, 61 BROADWAY, NEW YORK 6, N. Y.

(See page 54 for more Bulletins)

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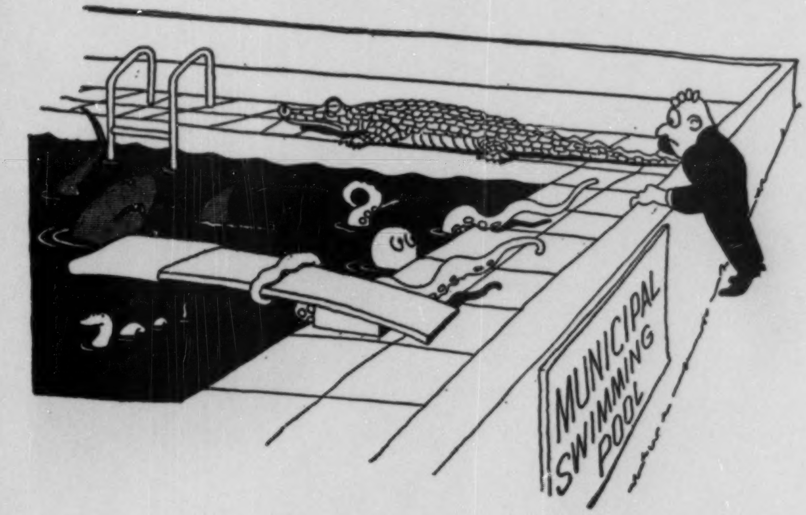
THE AMERICAN CITY MAGAZINE
470 PARK AVENUE SOUTH
NEW YORK 16, N. Y.



THERE'S AN ANSWER TO ALMOST EVERY PROBLEM!

(See other side)

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

To THE AMERICAN CITY's Catalog Supply Department:
Please send me literature on items numbered as follows, starting on page 43

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A Listing of Your Business Connection Is Important

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Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.

There's a quick-coupling, leak-proof, acid-resistant

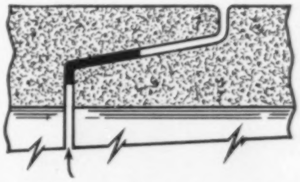
TYLOX®

flexible GASKET

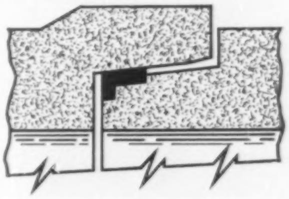
for any type of concrete pipe sewer line you plan or build

Are your files up to date on the *full line* of Hamilton Kent TYLOX Gaskets? Whether you are planning lines using T & G, B & S, Offset or Recessed Pipe, there's a special TYLOX true compression Gasket, in either rubber or neoprene, to assure fast pipe-laying and make the joints water-tight and acid-resistant for the life of the pipe itself. Check this list, and write for the TYLOX Data Brochures needed to make your reference files complete:

TYPE "C" and "C-P" TYLOX for Straight and Offset Pipe

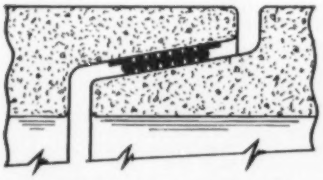


Type "C" Tylox under full compression. Note the visual inspection feature.



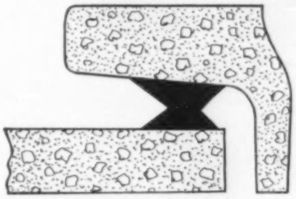
Type "C-P" Tylox under full compression. Flanges "lock" Gasket in proper position on the pipe offset.

TYPE "A" TYLOX for T & G Pipe



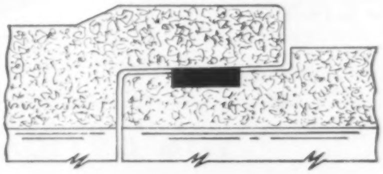
Type "A" Tylox under full compression on standard T & G Concrete Pipe.

TYPE "K" REXON for all types of B & S Pipe



Rexon "K" under full compression. Types available for both heavy and light duty service.

TYPE "CR" TYLOX (for Recessed Pipe)



Tylox Type "CR" under full compression. Wide, flat design makes "CR" roll and twist-proof.

USE THIS COUPON TO WRITE FOR MORE INFORMATION ▼

5152-3

HAMILTON KENT
MANUFACTURING COMPANY
KENT, OHIO
427 West Grant St. ORchard 3-9555

Please send data brochures on the following Tylox Gaskets:
Type "A" ☐ Type "C and C-P" ☐ Type "K" Rexon ☐
Type "CR" ☐

Name____________________

Firm____________________

Position____________________

Address____________________

City____________ Zone_____ State______

CANADIAN DIVISION: 3194 Mavis Rd., Cooksville, Ontario, ATwater 9-3671

THE TOP OF ITS CLASS

T-16 OPTICAL TRANSIT

In any comparison of optical and mechanical precision, features and versatility, three characteristics of this repeating transit become immediately evident:

The Wild T-16 is faster, more accurate, and much easier to work with than any other instrument in its price class.

This is the consensus of engineers and surveyors in mining, highway and land surveying functions throughout the world.

Your own evaluation, cordially invited, will quickly prove these facts. Write for the WILD Bulletin T-16.

Full Factory Services

WILD HEERBRUGG INSTRUMENTS, INC.

MAIN AT COVERT STREET, PORT WASHINGTON, NEW YORK • PORT WASHINGTON 7-4843

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 51.

"Your 'Garbage-Free' Community"

562 This booklet has been prepared as an aid to communities interested in investigating and perhaps establishing a program of garbage disposal through use of kitchen food waste disposers. The concept is discussed, preliminary steps delineated, and several approaches to wording an ordinance noted. For a copy, write IN-SINK-ERATOR MFG. CO., RACINE, WIS.

Wherever Insects Swarm

563 . . . that's the place for TIFA, an insecticidal fog applicator that destroys mosquitoes, flies and other insect pests on contact. It emits true clean fog, using either new or older type insecticides, and can be operated on propane or gasoline. For illustrated folder, write TODD SHIPYARDS CORP., PRODUCTS DIV., COLUMBIA AND HALLECK STS., BROOKLYN 31, N. Y.

Rugged Gate Valves for Water Works Service

564 Designed for severe underground service, these valves have only three moving parts. They spread pressure evenly from the hub to permit discs to seat without distortion, and are furnished with bell, mechanical joint or pipe connections. For descriptive literature, write R. D. WOOD CO., PUBLIC LEDGER BLDG., INDEPENDENCE SQ., PHILADELPHIA 5, PA.

Power-Crowd Loader

565 This unit scoops dirt while the tractor remains stationary. A new bulletin illustrates how the heavy-duty power crowd cylinders push the bucket into the pile for full ¾-yard load, and is raised aloft by heavy-duty lift cylinders. For a copy, write A. C. ANDERSON, INC., DEPT. 701, WILDWOOD, N. J.

Fibreglass Playground Equipment

566 This equipment is rugged, versatile and maintenance- and rust-free. There's "Snappy" the springy turtle, a space age rocket slide, a jet plane, "Foamy" the sea horse, and the "Bunny Bounce" to fire young imaginations and to provide safe fun. For complete-line literature, write CHILDREN'S PLAYGROUND EQUIPMENT CO., P. O. BOX 334, CORONA DEL MAR, CALIF.

Asbestos Cement Sewer Pipe

567 By writing to JOHNS-MANVILLE, BOX 14, AC-7, NEW YORK 16, N. Y., you can obtain facts and a data book on Transite, which points out the numerous ways in which this tough, durable asbestos and cement pipe can provide economies in sewer projects.

2-Way Radio Base Station with Greater Range

568 A new 2-way base station providing 100 watts of power output, consists of a receiver and transmitter housed in a table-top console. It is type accepted by Federal Communication Commission for operation in the police and fire radio service, and can operate from an ordinary auto storage battery in case of power line failure. Specifications can be obtained from AEROTRON, P. O. BOX 6527, RALEIGH, N. C.

(See page 57 for more Bulletins)

**Where security counts,
count on USS Cyclone Fence**

This is the easy way to protect people and property

Cyclone Fence

USS Cyclone Steel Fence is the simple solution for safeguarding lives and property in a public place. It protects children from traffic, stands pat against thieves, vandals and trespassers . . . and seldom succumbs to attacks of wind, fire or corrosion. It is extremely difficult to get through the fence or *over* it. And Cyclone Gates have a precise locking device that discourages unwanted entries.

USS Cyclone Steel Fence provides efficient, 24-hour protection at a reasonable cost for schools, parks, and all kinds of municipal projects. Write us today for details and complete specifications. American Steel & Wire, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

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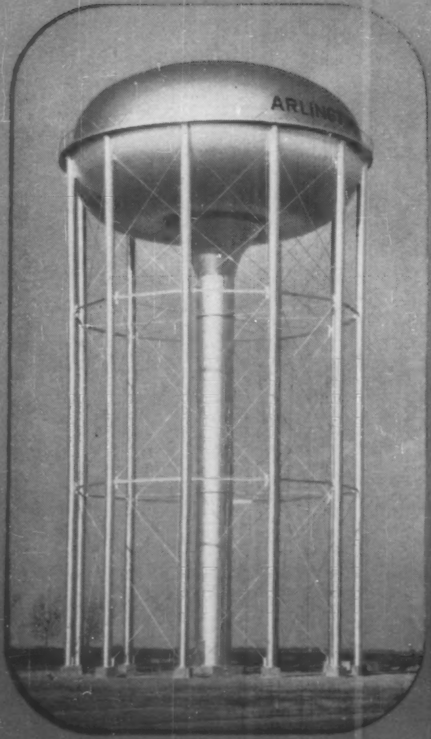
Three of the newest for TEXAS!



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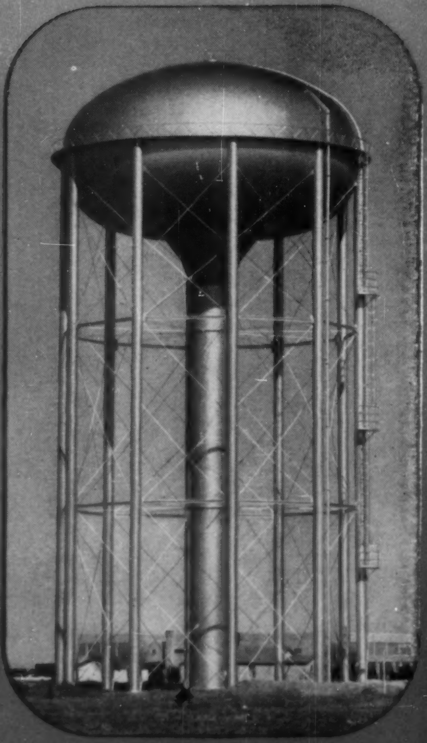

LUBBOCK, TEXAS

Pittsburgh-Des Moines
ToroSpherical® design
Elevated Steel Tanks

The ToroSpherical silhouette on the skylines of Arlington, Lubbock and Richardson tells the world that these progressive communities are enjoying the newest and best in water storage. Each unit is million-gallon big and dependable!

This handsome PDM Elevated Tank design offers *more capacity* for your construction dollar because less steel does more work—thanks to advanced engineering based on almost seventy years of elevated steel tank fabrication. In addition, PDM ToroSpherical Tanks combine maximum low-head-range efficiency with modern beauty of contour to harmonize with highest-value residential areas.

Get the figures: write or call our nearest office now for a quotation on your requirements—and ask for Bulletin 101.

PDM
ELEVATED STEEL TANKS

Pittsburgh-Des Moines Steel Company

Plants at PITTSBURGH, WARREN, BRISTOL, PA. • BALTIMORE • BIRMINGHAM • DES MOINES
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SANTA CLARA, CALIF.	P. O. Box 329
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ATLANTA (5)	361 East Paces Ferry Rd., N. E.
JACKSONVILLE	4066 Ferrarra St.
DALLAS (1)	Suite 1703, Southland Center
DENVER (2)	323 Railway Exchange Bldg.
SEATTLE (1)	500 Wall Street

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 51.

Vertical Multi-Stage Pumps

569 *Bulletin* No. 14 illustrates some of the basic designs of FloWay Industrial pumps, which deliver efficient pumping in a wide range of pressures, for any liquid, for any application—deep well or close-coupled. Capacities range from 15 gpm to 5,000 gpm. Types of drive include electric motor, gear, belt, steam turbine, or combination. Write FIESE & FIRSTENBERGER MFG. INC., BOX 164, FRESNO, CALIF.

Sewage Pumps

570 New *Bulletin* 500-A describes a vertical close-coupled "non-clog" sewage pump, designed to meet all the "must" requirements for sewage service. In addition, it offers the advantages of the double mechanical seal, maximum pump efficiencies and ability to handle 3" solids. Write SMITH & LOVELESS, DIVISION-UNION TANK CAR CO., P. O. BOX 8884, KANSAS CITY 15, MO.

Automatic Parking Meters

571 Eight-page *Bulletin* DU-525 describes in text and illustration the outstanding features of the Rockwell-Dual single automatic and twin parking meters for "on" and "off-street" parking. A complete parts list is included. For a copy, write DUAL PARKING METER CO., subsidiary of ROCKWELL MFG. CO., 400 N. LEXINGTON AVE., PITTSBURGH 8, PA.

Wipes Out Weeds and Brush

572 Available in both liquid and granular form, this potent non-selective herbicide can be used whenever weeds and brush create a safety hazard, an eyesore or a maintenance problem. It offers long-term control and tends to build increasing soil sterility. For literature on Urox, write ALLIED CHEMICAL, GENERAL CHEMICAL DIVISION, 40 RECTOR ST., NEW YORK 6, N. Y.

Want to Cut Compressor and Tractor Costs?

573 *Catalog* 5740 can help you. It describes a heavy-duty, 2-in-1 unit that is both 125 cfm compressor and husky tractor with front-end loader and backhoe. For a copy, write SCHRAMM INC., 603 N. GARFIELD AVE., WEST CHESTER, PA.

Reduces Danger of Playround Accidents

574 A descriptive catalog, available from AMERICAN BITUMULS & ASPHALT CO., 320 MARKET ST., SAN FRANCISCO 20, CALIF., explains how Walk-Top, a factory-compounded asphaltic surfacing material, can bring increased safety to play areas, minimize wear on clothing and equipment, and increase the life and service of the playground.

Measure Water, Sewage Flows Magnetically

575 *Bulletin* 20-14C gives full facts on magnetic flow meters that have no flow restrictions, no pressure taps to get plugged or frozen, no seals or purges, no moving parts. With them, measurement of water, sewage, sludge and difficult liquids in treatment plants flows is instantaneous, continuous, linear. Write THE FOXBORO CO., 957 NEPONSET AVE., FOXBORO, MASS.

Repeating Transit

576 For your municipal street and construction surveying needs you will find Wild *Bulletin* T-16 of value. It gives full facts on the versatile and accurate T-16 optical repeating transit. For a copy, write WILD HEERBRUGG INSTRUMENTS, INC., MAIN AT COVERT ST., PORT WASHINGTON, N. Y.

Cushioned Check Valves

577 *Bulletin* WS-1A, just released by GOLDEN-ANDERSON VALVE SPECIALTY CO., 1200 RIDGE AVE., PITTSBURGH 33, PA., fully describes the company's double cushioned check valves, which prevent damaging hammer and shock due to back surge. Installation is recommended on boiler feedlines, steam pumps, compressors and reciprocating pumps.

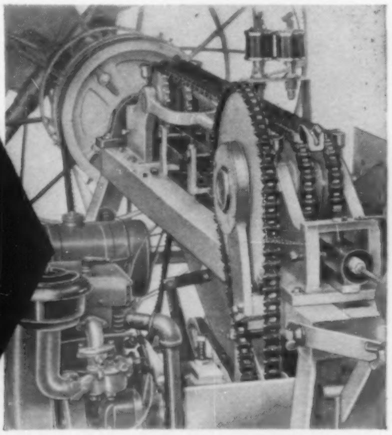
Sludge Collectors

578 *Bulletin* 6751 catalogs Yeomans dual line of "normal duty" and "heavy duty" Streamline sludge collectors for sewage and waste treatment. Sectional drawings show typical layouts for primary and final settling tanks. Technical specifications are detailed and complete. For a copy, write YEOMANS BROTHERS CO., 1999 N. RUBY ST., MELROSE PARK, ILL.

For Those Tough Pumping Jobs

Selector Bulletin No. 158 will introduce you to the types of pumps manufactured by NAGLE PUMPS, INC., 1249 CENTER AVE., CHICAGO HEIGHTS, ILL. All 18 types are for abusive applications and can be obtained with various types of impellers.

(See page 58 for more Bulletins)



FOR SEWER CLEANING

Positive NON-SLIP Rod Drive

The HEART of the Flexible "Automatic" SEWERODER

- Hardened Steel Drive Dogs, spaced between endless dual chains, provide controlled, non-slip power up to 4,000 lbs., no matter how greasy or muddy the rods may be.
- The Safety Overload Clutch protects pipe, rods, machine. Easily adjustable to relieve on predetermined overloads.
- The Footage Meter is synchronized with rod drive for pin-point tool location. Its accuracy eliminates costly guesswork in locating broken pipe.

Your "Flexible" representative will be glad to give you facts and figures or write for the SEWERODER Brochure.

FLEXIBLE INC.

3786 DURANGO AVE., LOS ANGELES 34, CALIF.
1005 SPENCERVILLE ROAD, LIMA, OHIO
415 SOUTH ZANGS BLVD., DALLAS, TEXAS

Use Northern Gravel
for
Rapid Sand Filter

SPIRIT LAKE WATERWORKS

Above is the fine Water Plant of Spirit Lake, Iowa . . . another of the many water plants all over the country that have used filtering material from the Northern Gravel Co. of Muscatine, Iowa.

Filter Sand Specifications
are carefully laid out. The Effective Sizes and Uniformity coefficients used by Consulting Engineers and also recommended by the American Water Works Association are the result of long years of research and experience.

The Northern Gravel Company is equipped to give you prompt shipment whether it be one bag or many carloads, exact to specifications. Filter sand can be furnished with any effective size between 0.35 MM and 1.20 MM.

Chemical Quality
of the filter sand is also important. It must be hard, not smooth, and free of soluble particles. This requires perfect washing and grading facilities. We have every modern device for washing, drying, screening and testing.

Filter Gravel
supporting the Filter Sand Bed, must be in turn, properly graded to sizes calculated to support the Filter Sand, and be relatively hard, round and resistant to solution.

Northern Gravel has no equal in facilities and our reserves of both sand and gravel are inexhaustible. Northern Gravel Company has been in business over 45 years. We guarantee uniformity of products and our records enable us to duplicate your requirements on short notice. Our location is central and we have commodity rates in every direction.

Northern Gravel Company
Box 307 **Muscatine, Iowa** Phone: AMherst 3-2711

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 51.

Turbine Bowl Submersible Pumps

580 The new Series UF turbine bowl submersible pump, recently announced by GOULD PUMPS, INC., 208 BLACK BROOK ROAD, SENECA FALLS, N. Y., are designed for any installation requiring a large volume of water from 6" or larger deep well. Built in sizes from 5hp to 40hp, it provides capacities up to 180 gpm from well depths to 1450 feet. *Bulletin* 650A1 gives full facts.

Tennis Anyone?

581 . . . is a phrase heard the year 'round in communities having all-weather-type asphaltic composition multiple-layer construction tennis courts with resilient color-seal. This type of court has player acceptance, is easy to service and maintain and is modest in cost. For full facts, and for information on resurfacing old asphalt type or concrete courts, write MASTER-KRETE, INC., AMERICAN ROYAL BLDG., KANSAS CITY 2, MO.

Good Reading for Cost-Conscious Cities

582 This bulletin gives complete details and specifications on the Trans-O-Matic OC-96, a crawler tractor that gives you job versatility with power, speed and ease of operation. Its the only crawler in its class with the advantages of torque conveyor and 3 types of turns. Write THE OLIVER CORP., 400 MADISON ST., CHICAGO 6, ILL.

What's New in Parking Meters?

583 Just by sending for current catalog literature you can find out about a completely dependable line of parking control equipment that offers top operational efficiency and great vandal resistive strength. Write DUNCAN PARKING METER, DIVISION OF MOTOR PRODUCTS CORP., 835 N. WOOD ST., CHICAGO 22, ILL.

Planning New Spectator Seating?

584 Then you'll no doubt want to peruse a 24-page catalog offered by AMERICAN BRIDGE DIVISION OF UNITED STATES STEEL, 525 WILLIAM PENN PLACE, PITTSBURGH PA. It will tell you about AmBridge Standard Steel Stadiums, which are easily adapted to any local requirements of size and design and ground contour.

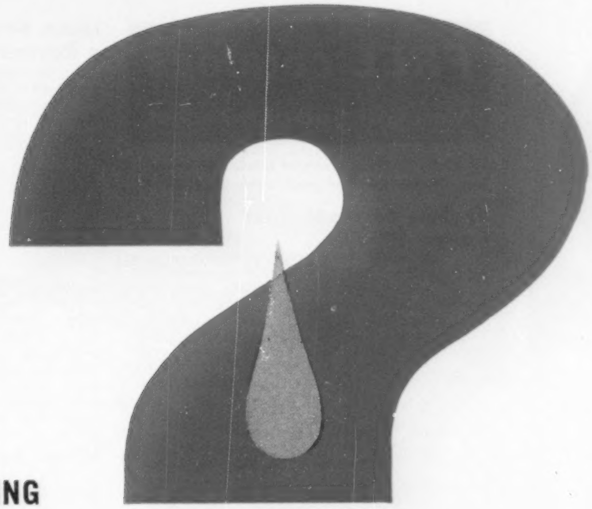
Joint Cleaning, Concrete Routing Machine

585 This unit cleans pavement joints, winding cracks for resealing. It also chips off worn concrete, leaving an ideal bonding surface for retopping. And it can level bumps and smooth rough spots. For descriptive literature, on the Model G-25, write G. H. TENNANT CO., 765 N. LILAC DRIVE, MINNEAPOLIS 22, MINN.

Spreads Ice Control Material

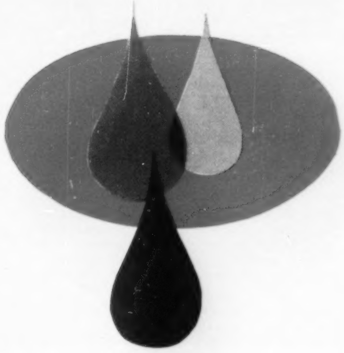
Four big, heavy-duty cab-controlled spreaders for ice control work, designed for installation on any standard dump truck body in only 15 minutes, are described in catalog literature and case histories, available from FOX RIVER TRACTOR CO., DEPT. R15, 1020 N. RANKIN ST., APPLETON, WIS. Spread widths are adjustable from 8 to 40 feet.

(See page 60 for more Bulletins)



ARE YOU SACRIFICING

POTENTIAL PUMPABILITY



Of course you are not willing to write off the substantial costs of a water well because of excessive drawdown! In many cases a decrease in production can not only be halted . . . it can often be reversed and returned to near the initial rate . . . by servicing or treating problem wells with advanced Halliburton Water Well Service Equipment and Techniques.

Your Halliburton Representative can show you how to improve your well's productivity by helping you select a proper service for a specific problem. Halliburton equipment and experienced personnel are available throughout the country — day or night — to provide you with services such as . . .

* **CEMENTING**

* **FORMATION TESTING**

* **ACIDIZING**

* **FORMATION FRACTURING**

* **HYDRO-SONIC REDEVELOPMENT**

* **SPECIAL TOOLS**

Contact your nearest Halliburton Representative for full details.

HALLIBURTON
WATER WELL SERVICES
HALLIBURTON COMPANY • DUNCAN, OKLAHOMA

HAYS

the Quality Line
IN
WATER
SERVICE
PRODUCTS

CORPORATION
STOPS

One of a
complete line of
Water Service
Products

GENERAL PRODUCTS DIVISION
HAYS MFG. CO.
ERIE, PA.

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 51.

Engines to Meet Your Power Needs

587 Because they produce a high power-to-fuel ratio, Superior engines can help you meet your municipal power needs economically. The complete line of diesels, dual-fuel and gas engines range from 190 to 2150 hp, or 150 to 1500 kw. For detailed information, write WHITE DIESEL ENGINE DIVISION, THE WHITE MOTOR CO., SPRINGFIELD, OHIO.

Flushes Streets Clean

588 Catalog literature, available from E. D. ETNYRE & CO., OREGON, ILL., describes a unit that cools and flushes streets 42-feet wide in a single pass. Its spray even gets under parked cars.

Special Insurance for Municipal Equipment

589 . . . affords you broader protection for your road graders, school and band instruments, snow plows, power mowers, voting machines, etc. Coverage includes fire, theft, flood, earthquake and windstorms. For complete information, request "All Risks" Insurance for Municipal Equipment; write AETNA CASUALTY AND SURETY CO., STANDARD FIRE INSURANCE CO., HARTFORD 15, CONN.

Mobile AC Electric Power

590 A 4-page bulletin illustrates and details a complete line of vehicle-mounted 110-220 volt AC generators, which can provide auxiliary power for lights, hand power tools, water pumps, fire and rescue equipment, pipe threading machines, chain saws, etc., when and where needed. Write GENERAC SALES, INC., WALES, WIS.

Suffer from Low Water Pressure?

591 Tuberculation and corrosion of mains and distribution grids could be the cause. A fast and economical cure? Write CENTRILLINE CORP., 140 CEDAR ST., NEW YORK 6, N. Y. Its new brochure fully describes an in-place process that permanently increases carrying capacities in all water lines from 4 to 144 inches in diameter.

Sewer Cleaning Equipment

592 Through use of this all-power equipment, many cities have reduced their sewer-cleaning costs 50% to 75%. The complement includes cable-type rodders, bucket machines, and sectional rod equipment. You will find a type to solve your sewer cleaning needs in catalog literature, available from O'BRIEN MFG. CORP., DEPT. PB760, 5632 NORTHWEST HIGHWAY, CHICAGO 46, ILL.

Portable Fire-Fighting Equipment

593 A new catalog of equipment engineered to bring greater efficiency and economy to fire fighting describes, illustrates and includes such items as foam eductors, nozzles, rotating cellar and attic pipe, "wet" wetting agent, all-purpose foam liquid, automatic proportioning systems for fire-truck applications. For a copy, write ROCKWOOD SPRINKLER CO., PORTABLE FIRE PROTECTION DIV., 3002 HARLOW ST., WORCESTER 5, MASS.

Make Sewage Sludge a Revenue Producer

594 Communities of every size are finding that when sludge is properly dried and rendered sterile, it can be a revenue-producing commodity and an excellent soil conditioner. For the treatment plant, it also means elimination of drying beds, lagoons and ash disposal. COMBUSTION ENGINEERING, RAYMOND DIVISION, 1132 W. BLACKHAWK ST., can provide you with facts on the Raymond system for flash drying sludge.

Centrifugal and Turbine Pumps

595 In a general illustrated bulletin, AURORA PUMP DIVISION, THE NEW YORK AIR BRAKE CO., AURORA, ILL., lists 22 service applications for these pumps, succinctly describes them and their use, and mentions a specific bulletin number that provides detailed data and specifications.

When an Emergency Strikes

596 Literature offered by NATIONAL CYLINDER GAS DIVISION OF CHEMETRON CORP., DEPT. M-105, 840 N. MICHIGAN AVE., CHICAGO 11, ILL., is pertinent to municipal emergency crews, waterfront safety teams, and police and fire department personnel. It presents cogent facts on Handy resuscitators.

3-Cubic-Foot Cement Mixer

597 Designed for smaller jobs, the self-propelled Port-A-Mixer takes the manual labor out of cement work, eliminates use of mortar box and wheelbarrow. The unit has a fast mixing cycle, mixes cement while being driven to point of use, and dumps same as a wheelbarrow. For literature, write MARS EQUIPMENT CO., INC., 5209 W. BROADWAY, MINNEAPOLIS 22, MINN.

Removes Stumps of Every Size

598 Here's a stump cutter that goes where large machines can't go, yet no stump is too large or too small for it. It works as well on uneven ground, slopes or hillsides as it does on flat terrain, and is reported to be almost vibrationless. For full facts on the one-man operated "Speedy Stump Remover," write THE WACHTEL SUPPLY CO., 611 MAYWOOD AVE., WAUWATOSA 13, WIS.

Fire Apparatus

599 To keep ahead in fire protection it's necessary to have a dependable complement of fire-fighting equipment. MACK FIRE APPARATUS, ALLENTOWN, PA., can provide you with information on a complete line of custom-built pumpers, aerials, squad and hose wagons and combination ladder trucks.

Sucks Stale Air Out, Pulls Fresh Air In

600 These controlled ventilation units are powerful vacuum-action air screws that produce 100% pulling or blowing power over their entire surface, eliminating dead spots. The several models and their applications and specifications are given in a 4-page bulletin, available from SUPER VACUUM MFG. CO., 318½ E. 17TH AVE., DENVER 3, COLO.

Refuse Hauls Getting Longer?

601 Then the 8-page brochure on the new Dempster compaction trailer will be of interest. This big hydraulic unit, equipped with its own power plant, hauls up to 200 yards of loose refuse; its giant hopper alone holds the contents of a 16-cubic yard conventional packer. Write DEMPSTER BROTHERS, DEPT. AC-7, KNOXVILLE 17, TENN.

(See page 62 for more Bulletins)

Five times the work at half the cost with an

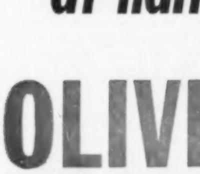
OLIVER OC-96!

TRANSOMATIC

Ask Joel Jenkins, superintendent of Lower Penns-Neck, New Jersey, township road department, why his town bought an Oliver OC-96 for sanitary landfill operations. "To save money!" he'll tell you. "We get five times the work out of our OC-96 as we did out of the dozer and loader previously used. The OC-96 costs us 100% less to operate than the two old machines!"

Power, speed and ease of operation are OC-96 features that make the difference, according to Mr. Jenkins. "We cover 70 tons of refuse a week with 8″ topsoil, as required by state law, and have time left to beef-up muddy truck lanes with 30 cu. yd. of cinders per week and rough-grade an acre of ground every day," says Mr. Jenkins. "The OC-96 is so effortless to operate and such a good all-around machine, we're going to use it on other jobs all over the township."

See and try the great new Oliver Trans-O-Matic OC-96 yourself—the only crawler in its class with these advantages: heavy-duty torque converter, and three types of turns. The OC-96 gives you the job-versatility with greater speed and lower cost every city and town needs. Ask your Oliver distributor for a demonstration.



NEW CATALOG—"must" reading for cost-conscious cities and towns. Gives complete details and specifications. Ask for your copy.

OLIVER

THE **OLIVER** CORPORATION
Dept. 2232, 400 West Madison Street, Chicago 6, Illinois
LOOK TO OLIVER FOR YOUR BEST BUY IN WHEEL AND CRAWLER TRACTORS

FREE catalogs

Write to address given or circle corresponding number on free post card on page 51.

Fast-Acting Weed Killer

602 Zep R-59 is a powerful, all-purpose and completely non-selective weed killer. It can be diluted to exact requirements and applied with sprayer or sprinkler can. Action is deep and sure, cutting down regrowth of undesirable vegetation. For detailed information, write ZEP MANUFACTURING CORP., P. O. BOX 2015, ATLANTA 1, GA.

"Highway Life Lines"

603 This is the title of a motion picture which tells how the right traffic paint can be safely and easily selected and specified. You can arrange for a showing by writing to CELLULOSE PRODUCTS DEPT., HERCULES POWDER CO., WILMINGTON 99, DEL., which makes Parlon, a chlorinated rubber base that brings faster dry and longer life to traffic paints.

Pumps for Municipal Services

604 In current literature from the PUMP AND HYDRAULIC DIVISION OF FAIRBANKS MORSE, KANSAS CITY, KANS., you'll find pumps for water works, sewage plants, power plants, public buildings and municipal projects of all kinds. And there are F-M electric motors and internal combustion drivers in all sizes to match each pump requirement.

Turn Sewage from an Expense into a Profit

605 An additional source of municipal income that's not based on tax increases is usually welcome. Numerous communities are finding it through profitable sludge disposal. The story's in "Sewage Sludge Utilization Datalog." Write ROYER FOUNDRY & MACHINE CO., 165 PRINGLE ST., KINGSTON, PA.

Packaged Sewage Ejector Stations

606 To provide sewers for residential areas normally difficult to serve, investigate literature, available from TEX-VIT SUPPLY CO., MFG. DIV., DEPT. M-60, P. O. BOX 117, MINERAL WELLS, TEXAS. They describe "shell-within-a-shell design" sewage lift stations. *Bulletin* No. DJ-60 features the Delta-Ject, a duplex unit available in 30 to 200 gpm capacities; *Bulletin* No. EJ-60, a simplex station called Ellipto-Ject that's available in the same capacities.

Sturdy Pickup Trucks

607 The strong chassis components, tough cab construction, brawny engines, heftier suspension—in fact, all the features that make these pickup trucks deliver maximum truck life, greater economy, and require less maintenance and repair are described in literature, available from CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICH.

When Security Counts

608 When it's necessary to provide efficient, 24-hour protection at reasonable cost for municipal projects such as swimming pools, schools, parks and playgrounds, Cyclone steel fence offers a simple solution. For details and complete specifications, write AMERICAN STEEL & WIRE, 614 SUPERIOR AVE., N. W., CLEVELAND 13, OHIO.

All-New Front-End Loader

609 A quick data check on the new H-30 points to 3,000-pound operating capacity—1 cubic yard bucket; 17% more horsepower than the next most powerful unit in its class; 4" more dumping clearance and 1 foot more dumping reach ahead of tires than any in its class. For complete data, write THE FRANK G. HOUGH CO., 710 SUNNYSIDE AVE., LIBERTYVILLE, ILL.

Controls for Water and Sewage Installations

610 Literature available from HEALY-RUFF CO., 823 HAMPDEN AVE., ST. PAUL 14, MINN., contains application information, engineering data mechanical and electrical specifications on automatic controls for water works and sewage installations. *Bulletin* RTM is concerned with remote supervisory control; *Bulletin* R-4, with pressure-operated elevated tank controls; *Bulletin* RPS, with pressure-operated sump controls; *Bulletin* 940, with float controls for pumps.

Low, Narrow Trencher

611 Though small in size, the 77 Trenchliner is big in capacity. It produces from 4.4 inches to 21 lineal feet of trench per minute, in 32 hi-lo digging speed selections. Trench widths range from 6 to 18 inches; maximum digging depth is 5 feet. For descriptive literature, write PARSONS CO., NEWTON, IA.

Street, Traffic Sign Manual

612 This *Sign Manual* is packed with illustrations and information on a complete line of street, traffic, school and guide signs and accessories. It's available from LYLE SIGNS, INC., 2722 UNIVERSITY AVE. S. E., MINNEAPOLIS 14, MINN., whose National Signing Service can help you select the most functional signs to meet your needs.

(See page 64 for more Bulletins)

DOWN she goes!

All brass and 2 feet wide, this 20-foot Cook Strainer is being lowered into a 125-foot well at a large Kentucky distillery. A No. 30-slot, Wire Wound Strainer was specified for this job by the Diehl Pump & Supply Co., Louisville.

Over the long-pull, this well will continuously deliver silt-free, sand-free water at the rate of 750 GPM. The Cook Strainer's exclusive V-shaped, self-cleaning slot makes dependable performance like this possible. Larger inside than out, the V-shaped slot prevents clogging—guarantees maximum delivery by filtering out silt, alluvium, clay, and fine sand from around the outside of the strainer. The result—maximum development with a free, unobstructed flow of water, for years to come. Investigate for yourself the advantages of Cook Well Strainers. They are available in Wire Wound and Brass Tube types, with slot sizes as required, in all standard diameters.

Made from Red Brass, Silicone Bronze, Armco Iron, and Stainless Steel. 8 to 24 hour delivery often possible by telephoning Cincinnati, HUmboldt 1-8800.

COOK WELL STRAINER CO.
6330 Glenway Avenue • Cincinnati 11, Ohio
WORLD'S LEADING NAME IN WELL STRAINERS

add control valves
replace old valves FAST
with new MUELLER® Cut-In Sleeves & Valves

■ New control valves can be added to your system and old, inoperative valves can be replaced quickly with Mueller Cut-In Sleeves and Valves.

Installation is fast and simple. New Mueller Mechanical Joints on both sleeve and valve are large enough to fit class "D" pit-cast pipe and small enough to be used with class "150" centrifugally cast pipe.

Only two gaskets are used. A solid rubber gasket is used with all larger classes of pipe, such as class "D". A special rubber gasket, reinforced on both ends with duck to prevent cold flow, is used with all smaller classes of pipe.

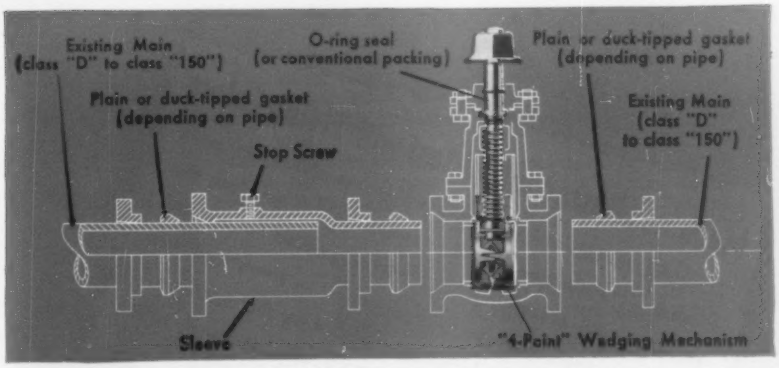
These two gaskets, each accurately sized to the class of pipe, make installations faster, simpler and cheaper. Joints are permanently tight, too.

Write for full information.

MUELLER 4 CHATTA TENN
4" CUT-IN
175 W AWWA 350 TEST
MUELLER 4" CUT IN
CUT 18¼" FROM MAIN FOR SLEEVE & VALVE
4" CUT-IN

MUELLER Cut-In Sleeve and Valve installed in main

Standardize on* MUELLER *valves with exclusive "4-Point" wedging mechanism.


Existing Main (class "D" to class "150")
O-ring seal (or conventional packing)
Plain or duck-tipped gasket (depending on pipe)
Plain or duck-tipped gasket (depending on pipe)
Existing Main (class "D" to class "150")
Stop Screw
Sleeve
"4-Point" Wedging Mechanism

The wedging mechanism of Mueller Cut-In Valves is identical to that of Mueller AWWA Gate Valves and Tapping Valves. Parts are interchangeable. Standardize on Mueller.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited; Sarnia, Ontario

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 51.

Lightweight Motor Drill

613 The 53-pound Cobra is ideally suited for light drilling jobs. It is completely self-contained and its 1-cylinder, 2-stroke gasoline engine can drill 50-60 feet on a 2-quart tankload of fuel. One-man operated, it drills in any position up to 45°. For literature, write ATLAS COPCO, DEPT. AC7, 545 FIFTH AVE., NEW YORK 17, N. Y.

Heavy-Duty ¾-Yard Machine

614 The Thew Shovel Co.'s new 20-page booklet on their ¾-yard crawler-mounted Lorain Model 26 gives details of construction and job applications for use as shovel, crane, clamshell, dragline, hoe, log loader, pile driver and magnet. For a copy of *Bulletin* 26751-0, write ADVERTISING DEPT., THE THEW SHOVEL CO., LORAIN, OHIO.

They Roll to and on the Job

615 *Bulletin* 60-3 describes and illustrates with on-the-job photos the complete line of Rolcor static, vibratory and vibratory sub-base tow-type rollers, for use in street repair work, golf course and sports grounds maintenance and landscaping. For a copy, write ROLCOR DIVISION, ROSCO MFG. CO., 3118 SNELLING AVE., MINNEAPOLIS 6, MINN.

Quick-Reference Fir Plywood Catalog

616 This 16-page catalog contains up-to-date basic information on fir plywood standard grades and specialty products for engineers, architects and building code officials. It is indexed for A.I.A. filing (No. 19-F). For a copy, write C. H. SANFORD, DOUGLAS FIR PLYWOOD ASSOCIATION, TACOMA 2, WASH.

Detects Vehicles at Intersections

617 The newest in vehicle detection is the subject of *Bulletin* D-165, which shows how the Electro-Matic Model RD-2 radar vehicle detector meets all traffic-actuated signal requirements and solves more traffic signal problems. For a copy, write AUTOMATIC SIGNAL DIVISION, EASTERN INDUSTRIES, INC., NORWALK, CONN.

Help for Water Lines

618 Up-to-date literature on several models of dependable air control valves, designed to keep long water lines open for safe, efficient economical operation, can be obtained from MULTIPLEX MFG. CO., DEPT. E, BERWICK, PA.

From Incandescent to Mercury Vapor

619 A kit designed to convert EEI-NEMA street lighting heads from incandescent service to mercury vapor lighting facilitates changeover at low cost and in approximately nine minutes. For complete information, write R. H. SANDERS, TRANSFORMER DEPT., SYLVANIA ELECTRIC PRODUCTS INC., IPSWISH, MASS.

Tractor Loader Literature

620 Now available from ALLIS-CHALMERS MFG. CO., CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WIS., are *Catalog* MS-1386, a specification sheet covering the recently introduced TL-12 tractor loader, and 8-page *Catalog* MS-1373, which features the TL-14 tractor loader and includes bucket selection chart and complete specifications.

Mosquitoes Don't Have a Chance

621 Wherever mosquitoes breed — in catch basins, swamps, ditches, rain pools—just toss in Tossits and you'll get 100% kill. For no species is immune to the lethal film spread by this capsule when ruptured. For full information, write WYCO INTERNATIONAL, 4811 CARNEGIE AVE., CLEVELAND 3, OHIO.

1-Man Measuring Team

622 Surveyors and engineers will appreciate this wheel, for it actually measures any distance at walking speed and records 100,000 feet automatically, shows inches and fractions of an inch and tenths of a foot, and keeps accumulated total in full view at all times. For descriptive literature, write ROLATAPE, INC., 1741 14TH ST., SANTA MONICA 2, CALIF.

Monitors Impurities in Municipal Water Supplies

623 A new tape analyzer automatically detects coliform bacteria, algae and plankton in municipal water supplies, and potentially can be modified to detect trace quantities of pollutants and radioactivity in water and the atmosphere. For further information, write MARTIN WANK, MGR., SALES PROMOTION, GRAVER WATER CONDITIONING CO., 216 W. 14th ST., NEW YORK 11, N. Y.

(See page 66 for more Bulletins)

products for the public good

SINCE 1898

Machines Passed Initial Test with Flying Colors

. . . All tabulations obtained within minutes after polls closed . . . election board member said, "we feel the machines did everything they were supposed to do, and more . . . there were no malfunctions . . . everything was smooth . . . voting is definitely speeded by the machines."

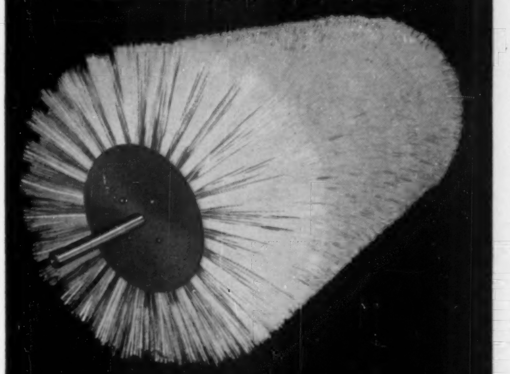
From the Marion, Ohio, STAR—November 4, 1959

AUTOMATIC
VOTING MACHINE
division of Rockwell Manufacturing Co.
Jamestown, N.Y.

RADAX®

A TRULY NEW CONCEPT IN
PREFABRICATED
Street Sweeper Brooms

NO CORES TO BUY!



filled with long wearing water repellant SR Plastic Filament or Tynex Nylon.

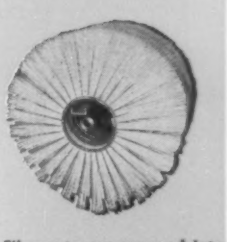
STEP UP to long-wearing, PREFABRICATED Plastic Brooms without making a capital investment. Get the lowest broom cost per mile you have ever experienced — with a NEW BROOM that really sweeps clean.

- NO CORES TO BUY
- NO CHANGES IN PRESENT EQUIPMENT
- TRUE BALANCE AND UNIFORMITY THROUGHOUT

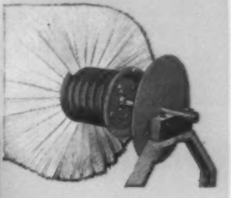
RADAX units are made on high-speed fully automatic machines. The cost factor is held down to an absolute minimum.

ONE — TWO — THREE and GO

1. Remove your stretchy broom cable.
2. Screw on the RADAX unit.
(Visualize the RADAX Broom Coil as a big nut and your broom core as a threaded bolt. The RADAX unit screws on like putting a nut on a bolt.)
3. Anchor coil ends (we furnish anchor fixtures) and you are ready to go!



Filaments are grouped into tufts — bound in steel channel and formed into the unique continuous one-piece RADAX Coil.



Screw the RADAX Broom Coil onto the old core — anchor — it's ready to go!

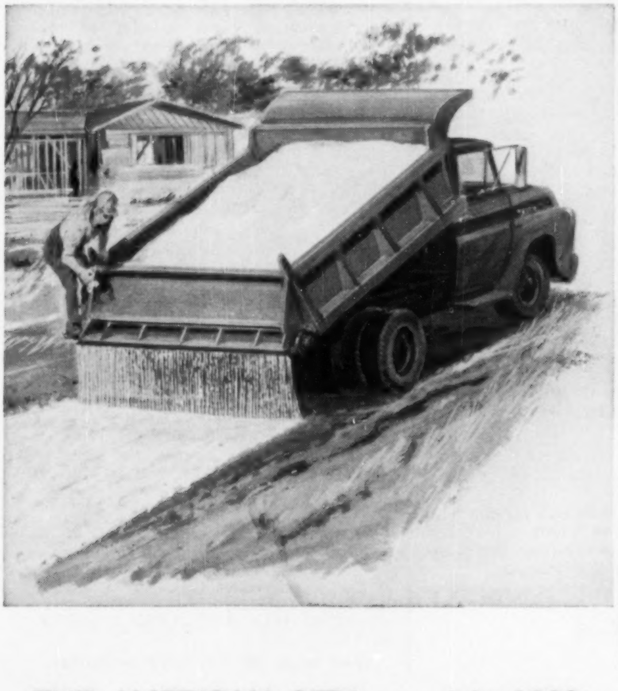
PRICES — delivered to your shop

SWEEPER MAKE and MODEL	SR FILAMENT	TYNEX NYLON
MOBILE 54" BROOM	$195.85	$293.15
MOBILE 58" BROOM	$208.30	$310.60
WAYNE 450, 460 and 550	$169.75	$252.50
ELGIN STREET KING	$258.20	$388.10
ELGIN WHITE WING	$258.20	$388.10

The RADAX Unit is disposable when worn out. Nothing to return for refilling.

RYNAL CORPORATION
DEPT. D 114 ST. JOSEPH ST.
ARCADIA, CALIFORNIA • HI 6-3600

Cut road dust and maintenance with SOLVAY CALCIUM CHLORIDE



Using simple equipment to spread Solvay® Calcium Chloride, you can save on unpaved road maintenance all season.

This clean, odorless product prevents dust loss of your road materials. Roads stay in shape with less blading. And, you reduce costly replacements of local gravel, limestone, clay or sand.

Dust conditions and resulting highway accidents are greatly reduced. No wonder road men find that a calcium chloride program is so helpful in winning public support for their department's activities! Get the details in the booklet offered below.

Allied Chemical

SOLVAY PROCESS DIVISION
61 Broadway, New York 6, N. Y.

Please send without obligation "The Solvay Calcium Chloride Road Book."

2-70

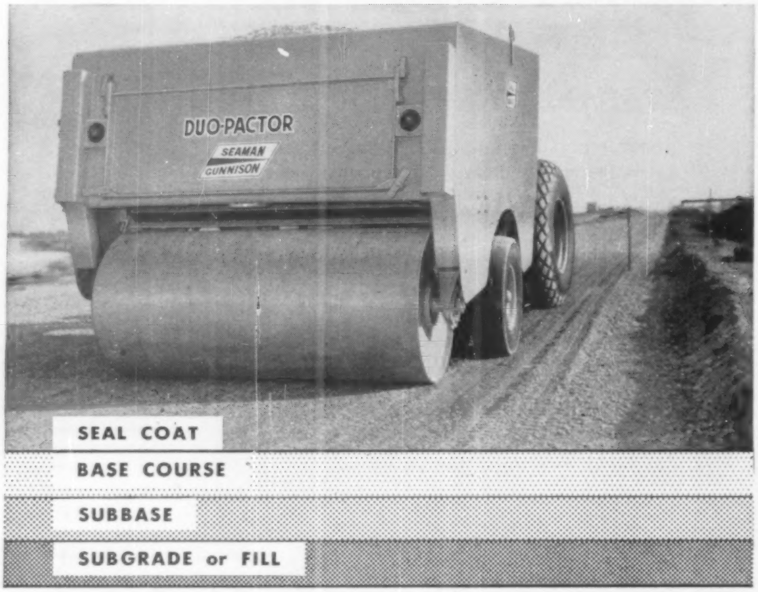
Name______________________________

Position______________________________

County, Town or Company____________________

Address______________________________

City__________________Zone______State______

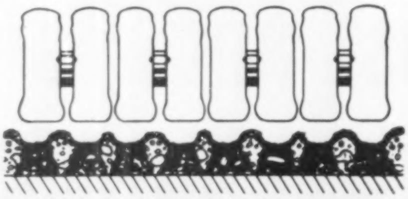


from fill to finish . . .

only the DUO-PACTOR can do all your compaction!

THAT'S BECAUSE:

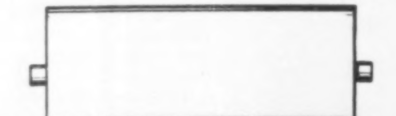
Only Duo-Pactors combine *both* steel and pneumatic rolling in a low-cost, self-propelled, variable-ballast compactor.



The closely spaced rubber tires form compacted tracks of *high* density.

YOU SAVE:

- Up to 50 per cent of your necessary investment in compaction equipment.
- Up to 75 per cent in compaction time.



The steel roll chokes in the ridges between tire tracks, assuring *uniform* density.

PROOF? Write or phone today.

Write for Free informative bulletins!

SEAMAN-GUNNISON
DIVISION OF
SEAMAN CORP.
MILWAUKEE, WISC.—U.S.A.

P. O. Box 3025, Milwaukee 18, Wis.
Tel.: SUnset 1-8900

- Duo-Pactors
- Bituminous Distributors
- Tri-Pactor
- Street Flushers
- Impactor
- Utility 6-yd Scraper

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 51.

New Sludge Removal Bulletin

624 A new 12-page bulletin, No. 315-81, announced by PROCESS EQUIPMENT DIV., CHAIN BELT CO., MILWAUKEE 1, WIS., describes the Rex Unitube Tow-Bro sludge remover for municipal and industrial use, outlines why Unitube designs allows a saving of 20% or more in equipment costs to previous nozzle and arm design, illustrates the adaptability of the Tow-Bro to any size tank and explains its ability to provide rapid sludge removal.

Saves $3,900 a Year

625 That's the amount Somerville, Mass., saves through new accounting efficiency achieved with the help of Burroughs office automation equipment. For details on the Somerville story and to learn of this full line of equipment, write BURROUGHS CORP., DETROIT 32, MICH.

Two Motor Grader Bulletins

626 New design and construction features of the Huber-Warco 6-D and 7-D motor graders with torque converter and power shift transmission are explained and illustrated in *Bulletin* No. HWG 521. *Bulletin No.* HWG 508 describes the important features of the 195-hp 5D-190, a big capacity motor grader.

Rock Salt for Ice Control

627 When you specify Morton rock salt, you can be certain of getting the quantity you need when you need it from a source near you. For details, write MORTON SALT CO., INDUSTRIAL DIVISION, 110 N. WACKER DRIVE, CHICAGO 5, ILL.

Better Sports Lighting

628 Parks, playing fields and other recreation areas remain in use after sundown when Wide-Lites are on the job. For these sports lights give off a broad, even light pattern, eliminating shadows and "hot spots" from playing fields. And they require 50% less transformer capacity. For full facts, write WIDE-LITE CORP., P. O. BOX 191, HOUSTON 1, TEXAS.

Does Its Own Backfilling

629 The Davis T-66 utility trencher features positive traction, hydraulic variables speed drive, convenient control and ease of operation. It digs 3" to 4" wide to 66" deep, or 12" wide, 30" deep at varying widths and depths in between. And it trenches from 1' to 12' per minute, depending on soil conditions. For literature, write DAVIS MFG. INC., 1517 S. McCLEAN BLVD., WICHITA 13, KANS.

High-Cycle Electric Paving Breaker Set

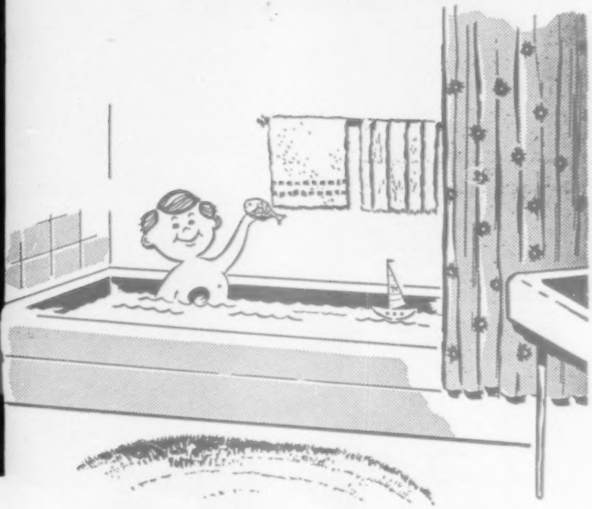
630 *Bulletin* L-825A gives full facts on a compact and extremely low-cost team that's comprised of a Bosch paving breaker and a Homelite carryable generator. The breaker does all that a 45-pound air hammer does; the generator provides enough high-cycle power for two paving breakers, 110 volts for floodlights and AC-DC electric tools. Write HOMELITE, A DIVISION OF TEXTRON INC., 107 RIVERDALE AVE., PORT CHESTER, N. Y.

(See page 68 for more Bulletins)

RECOMMENDED FOR DEEP WELL SUBMERSIBLE PUMP INSTALLATIONS...

RIGID PIPE

made of **ABS** *Plastic*



RIGID PIPE SUBMERSIBLE PUMP INSTALLATIONS OFFER NEW PROOF OF SUPERIORITY OVER CONVENTIONAL PIPE

BE *ABSolutely* SURE . . .
INSIST ON RIGID *ABS* PIPE
made of
CYCOLAC
THE BORG-WARNER PLASTIC THAT IS
TOUGH, HARD AND CORROSION-RESISTANT

In municipal installations . . . in irrigation lines . . . in sprinkling systems . . . and now in submersible jet pump installations, rigid pipe made of Cycolac ABS is demonstrating its ability to out-perform conventional pipe! Highly tensile and rustproof, it is recommended by submersible pump manufacturers for 100-ft. and deeper wells. Tasteless, odorless and non-toxic, it is fully NSF-approved for carrying drinking water. Swiftly installed and connected, it is acclaimed by submersible pump installers everywhere—saves 50 to 75 per cent over metal pipe installation costs! An added feature—servicing a unit suspended from lightweight rigid pipe is relatively simple!

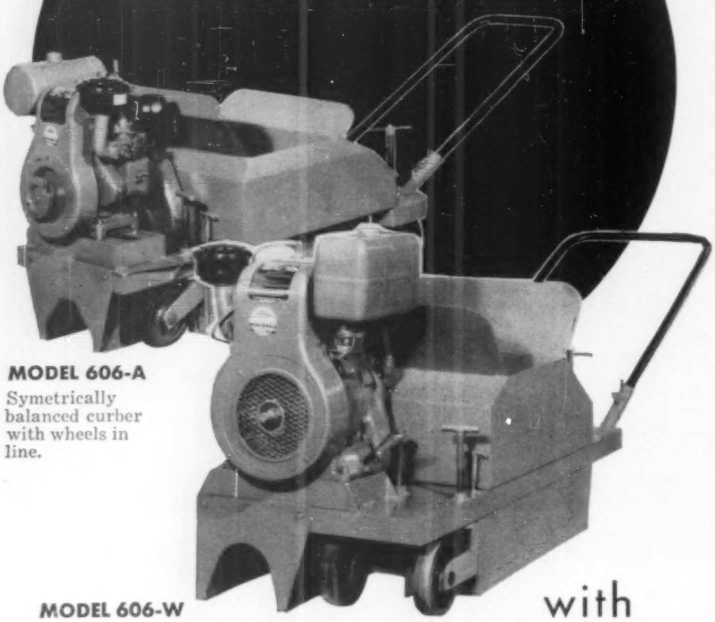
Write for the name of your nearest supplier

MARBON CHEMICAL
WASHINGTON

MARBON CHEMICAL
B-W
BORG-WARNER

DIVISION **BORG-WARNER**
WEST VIRGINIA

FASTER CURB LAYING



MODEL 606-A
Symetrically balanced curber with wheels in line.

MODEL 606-W
Offset curber. Allows curb laying within 1" of obstructions.

with STEPHENS-CANFIELD HEAVY DUTY Automatic CURBERS

TYPICAL MOLD DESIGNS

Nearly 100 mold designs to select from . . . high, low or wide curbs. Write us your requirements and send sketch of desired mold design.

Now . . . lay wider, higher compaction curbs at speeds up to 12 feet per minute! . . . without forms!

New, larger STEPHENS-CANFIELD Heavy Duty Automatic Curbers are rugged production machines that will lay more curb with less down time . . . thus saving time and money!

The Heavy Duty Curber is the Big Brother to the STEPHENS-CANFIELD Automatic Curbers . . . models 55-A and 56-W, which have proven themselves with over 1000 contractors.

The machines use either concrete or asphalt mix. They reduce costs by eliminating forms and extruding a dense curb section that requires no hand finishing.

For complete information on all STEPHENS-CANFIELD Automatic Curbers write:

AUTOMATIC POWER CURBERS INCORPORATED CURBING MACHINES

POWER CURBERS, INC.
P. O. Box 1465 Tel. MElrose 6-5871
SALISBURY, NORTH CAROLINA

6189

YOU NEED *These catalogs*

Write to address given or circle corresponding number on free post card on page 51.

Corrosion Protection for Sewage Plants

631 Tough, impervious Bitumastic coatings are available to help you solve the problem of corrosive attack made by sewage gases on concrete or metal surfaces. In fact, KOPPERS CO., INC., TAR PRODUCTS DIVISION, DEPT. 103G, PITTSBURGH, PA., has published a helpful brochure on sewage plant protection through use of coal-tar coatings.

Tractor for Fast-Paced Jobs

632 A 12-page booklet describes features of the new D6 Series B tractor. They include a new diesel engine rated at 93 flywheel horsepower with 25% more lugging ability, a new dry-type air cleaner, Cat oil clutch and lifetime lubricated track rollers and idlers. For full story, request "The New Work Styled D6," *Form* 33611, from CATERPILLAR TRACTOR CO., PEORIA, ILL.

Trickling Filter Flies Beware!

633 Formula R.S.C. kills psychoda flies, larvae and pupae without damage to zoogleal film, without destroying beneficial bacteria and without reducing filter efficiency. An inhibitory factor makes it effective on flies that show resistance to other insecticides. For literature and field test reports, write GLENN CHEMICAL CO., INDUSTRIAL CHEMICALS DIVISION, CHICAGO 14, ILL.

Police Motorcycles

634 Successful law enforcement through effective police mobility is the theme of a folder offered by HARLEY-DAVIDSON MOTOR CO., MILWAUKEE 1, WIS., which recommends Solo motorcycles as the ideal police pursuit vehicle and Servi-Cars for parking and meter work and for residential patrolling.

Cut-In Sleeves and Valves

635 With these units you can add new control valves to your system and replace old, inoperative ones more quickly, more simply and less expensively. For descriptive literature giving full facts, write MUELLER CO., DECATUR, ILL.

Sanitary Drinking Fountains

636 Catalog literature from THE HALSEY W. TAYLOR CO., 137 NORTH ST., WARREN, OHIO, illustrates and describes a complete line of sanitary drinking fountains for indoor and outdoor use. All maintain constant height of drinking stream, regardless of variation in line pressure.

Concrete Force Mains

637 High initial capacity, high sustained flow coefficient and long life recommend concrete steel-cylinder pipe for the transmission of water. Other advantages can be learned from PRICE BROTHERS CO., E. MONUMENT AVE., DAYTON, OHIO.

Rigid Plastic Pipe for Submersible Pump Installations

638 Highly tensile, rust-proof rigid pipe made of Cycolac ABS plastic is now recommended by submersible pump manufacturers for deep wells of 100 feet or more. In addition, it is NSF-approved for carrying potable water and is said to save from 50% to 75% over metal pipe installation costs. For full facts, write MARBON CHEMICAL DIVISION OF BORG-WARNER, WASHINGTON, W. VA.

MAINE — This Huber-Warco 6-D2 motor grader is working on a road widening project for a city in Maine. The city uses the grader on new construction, road maintenance and snow removal.

HUBER
WARCO

HUBER-WARCO *motor graders*

with Torque Converter and Power Shift Transmission

SMOOTH, FULL POWER NO MATTER WHAT THE LOAD— Huber-Warco motor graders offer a power train matched to any load condition. It puts more power to work—smoothly, efficiently and economically.

TORQUE CONVERTER— Automatic features eliminate engine lugging and heavy load shocks. Engine torque is multiplied three times to give fast, effortless starts even with heavy loads.

POWER SHIFT TRANSMISSION— Power shifting makes the grader far easier to operate because of fewer controls. Shifting up or down under load at full throttle is done by moving one lever. Tailshaft governor maintains speed set on hand throttle.

HYDRAULIC CONTROLS— Complete blade control without leaving the cab—including all bank sloping positions. Easiest graders to operate means less operator fatigue and more production.

A trusted product name backed by respected distributor names from coast to coast

MOTOR GRADERS

Standard transmission models from 83 to 160 H.P. Torque converter and power shift transmission models from 102 to 195 H.P.

TANDEM ROLLERS

3-5 Ton • 4-6 Ton Retractable • 5-8 Ton • 8-10 Ton • 8-12 Ton • 10-14 Ton

3-WHEEL ROLLERS

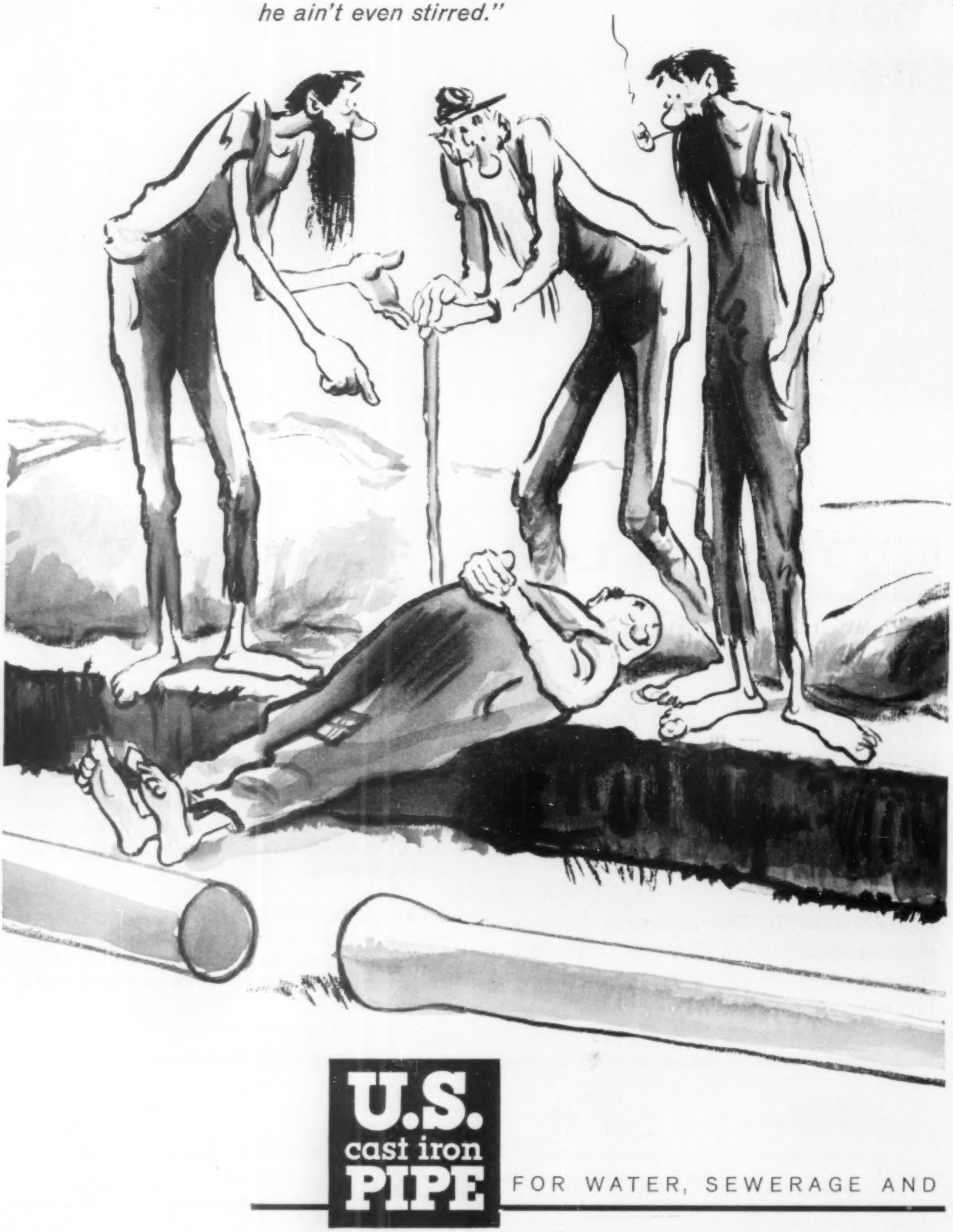
10-Ton • 12-Ton • 14-Ton Standard Weight 10-12 Ton • 12-14 Ton Variable Weight

MAINTAINER

M-52 — 45½ H.P. Attachments are Lift-Loader, Broom, Bulldozer, Patch Roller, Scarifier, Snow Plow, Berm Leveler

HUBER-WARCO COMPANY Marion, Ohio, U.S.A.

"First we thought we'd have to move Oncle Bull but Tyton lays so easy he ain't even stirred."



U.S. cast iron PIPE FOR WATER, SEWERAGE AND

no fuss, no muss, no cuss!

Fact! Not a worry in a workload with Tyton Joint® pipe. This easy-going pipe is so easy to assemble . . . lays so fast your ditcher has to step on it to keep ahead.

Tyton® is so simple. Only one accessory needed. No bell holes. No caulking equipment. No nuts or bolts to fasten. Minimizes weather worries too. You can lay Tyton in rain or wet trench. That means more working days, more production, lower installation cost.

Get the facts on time, money, trouble-saving Tyton Joint pipe. You'll sell yourself. Call or write today.

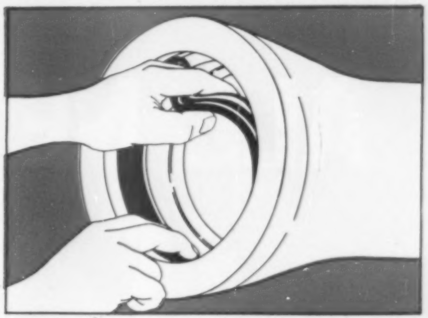
U.S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

A Wholly Integrated Producer from Mines
and Blast Furnaces to Finished Pipe.

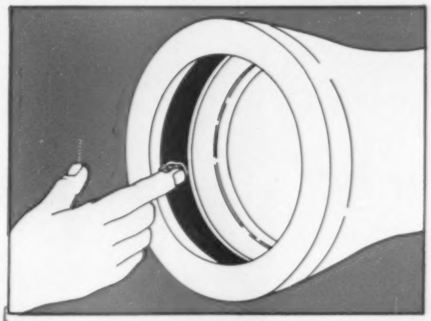
INDUSTRIAL SERVICE CAST IRON®

TYTON®

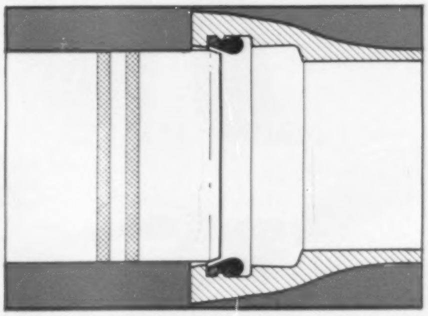
ONLY FOUR SIMPLE ACTIONS



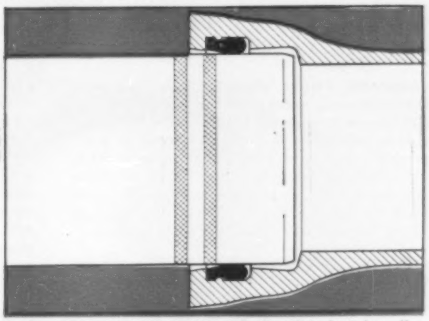
Insert gasket with groove over bead in gasket seat . . . a simple hand operation.



Wipe film of Tyton Joint® lubricant over inside of gasket. Your receiving pipe is ready.



Insert plain end of entering pipe until it touches gasket. Note two painted stripes on end.



Push entering pipe until the first painted stripe disappears and the second stripe is approximately flush with bell face. The joint is sealed . . . bottle-tight, permanently! The job's done . . . . fast, efficiently, economically. Could anything be simpler?

ALL NEW-LOW COST
HOMELITE

High-Cycle Electric Paving Breaker Set

COMPARE THESE COSTS. This high-cycle electric paving breaker will do everything that a 45 lb. air hammer will do but look at the costs. A 45 lb. air hammer, hose and small air compressor cost at least $3,000. This paving breaker set . . . The BOSCH (Germany) Paving Breaker and the HOMELITE Generator to run it . . . cost about $1,300 combined. These are savings you'd like to pocket. But that is far from all.

COMPARE THESE RESULTS. Gets to the job faster. Compact and lightweight, the complete set can be rushed in a station wagon, small truck or car trunk. Makes less noise and pays an important, extra dividend. The HOMELITE Generator provides enough high-cycle power for two paving breakers; and in addition, 110 volts DC current for floodlights and AC-DC electric tools. Simple design and rugged construction assures minimum maintenance. And service, when necessary, is available in the sixty-five HOMELITE Factory Branches located throughout the country. Write for Bulletin L-827A, right now.

BOSCH HIGH CYCLE ELECTRIC PAVING BREAKER
Dimensions: 28" x 21" x 5"
Weight: 60 lbs.
Blows per Minute: 1250
Current Consumption: 1500 watts
Motor: 180 cycle, 230 volt, 3-phase AC (high-cycle)

HOMELITE CARRYABLE GENERATOR
Rating: 3000 watts, 230 volt, 180 cycle, 3-phase AC. 2500 watts, 110 volt DC.
Dimensions: 30" x 20" x 20"
Weight: 143 lbs.
Fuel Consumption: 1½ hours per gallon at full load.

HOMELITE
A DIVISION OF TEXTRON INC.
107 Riverdale Ave., Port Chester, N. Y.
Manufacturers of Carryable Pumps, Generators, Blowers and Chain Saws
In Canada, Terry Machinery Co., Ltd.

Tools built by BOSCH (Germany)
Sold and Serviced by HOMELITE

What Every WATER SUPERINTENDENT Should Know About

AMERICAN METERS

All Bronze

FROST BOTTOM METER

Now, a true frost bottom meter of all bronze construction . . . internal metal parts, meter body, frost bottom. There are no dissimilar metals exposed to the water.

When the ALL-BRONZE frost-bottom American Meter freezes, the center section breaks by tension immediately relieving the strain on all internal parts. The exact location and type of fracture are design controlled. Every American Frost-Bottom Meter breaks in the **same** manner, at the **same** pressure, at the **same** place.

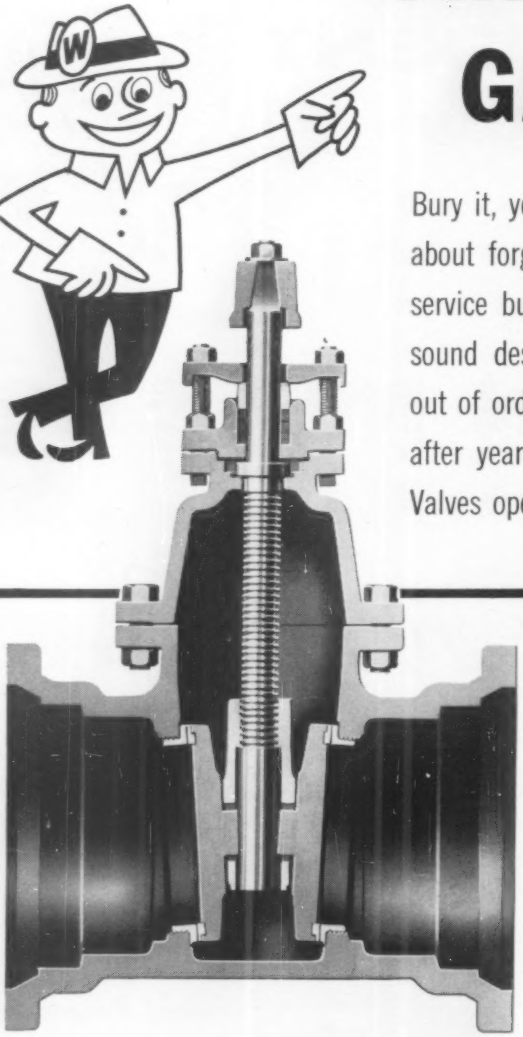
All interior parts including the gears move with the ice and are undamaged. After a freeze-up, only the bottom must be replaced — a low-cost, simple operation.

The All-Bronze Frost Bottom feature is one of many outstanding, cost-saving features of American Meters all described in Bulletin 58. We will be glad to mail you a copy on request.

BUFFALO METER COMPANY
INCORPORATED
2902 Main Street • Buffalo, New York

THE R. D. WOOD GATE VALVE

Bury it, yes, and if R. D. Wood made it, you can just about forget it, too. There are generations of reliable service built into the R. D. Wood Gate Valve. Simple, sound design is the secret; no delicate parts to get out of order, no pockets to fill up with sediment. Even after years of idleness in the lines, R. D. Wood Gate Valves operate easily, smoothly.



ONLY THREE MOVING PARTS:

The spreader and two discs comprise the complete internal mechanism. In closing, gates are first lowered into position before spreading action begins. Then spreading pressure is distributed evenly from the hub to permit the discs to seat without distortion. Both discs are equally tight against pressure from either side of valve.

AND THESE FEATURES, TOO: Made of thoroughly seasoned castings, rigidly inspected and tested to 300 pounds hydrostatic pressure. Available with bell, mechanical joint or flange pipe connections; conventional or "O" ring packings.

Conform to latest AWWA specifications

R. D. WOOD COMPANY

Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers also of Mathews Modernized Hydrants, Mathews Flange Barrel Hydrants, R. D. Wood Hydrants, and "Sand-Spun" Pipe (centrifugally cast in sand molds)

STEPHENS
NO TURNS
TRAILWAYS
GAS
SAVE WITH NATURAL GAS
BUREAU OF FIRE
No 7
M16-157

Latest addition to Richmond's fire fleet, which includes 24 Mack pumpers and 4 aerials, is this new Mack triple-combination 750 gpm unit. Powered by a Mack Thermodyne 275 hp engine, it features a cab-mounted portable 1100 gpm monitor nozzle, with straight and fog tips.

To keep ahead in fire protection Richmond adds still another Mack

With the addition of this new Mack Model C-85 cab-forward pumper to its fire fleet, Richmond, Virginia, once again places its reliance on Mack's unsurpassed ability to pump large amounts of water effortlessly for the duration of any fire.

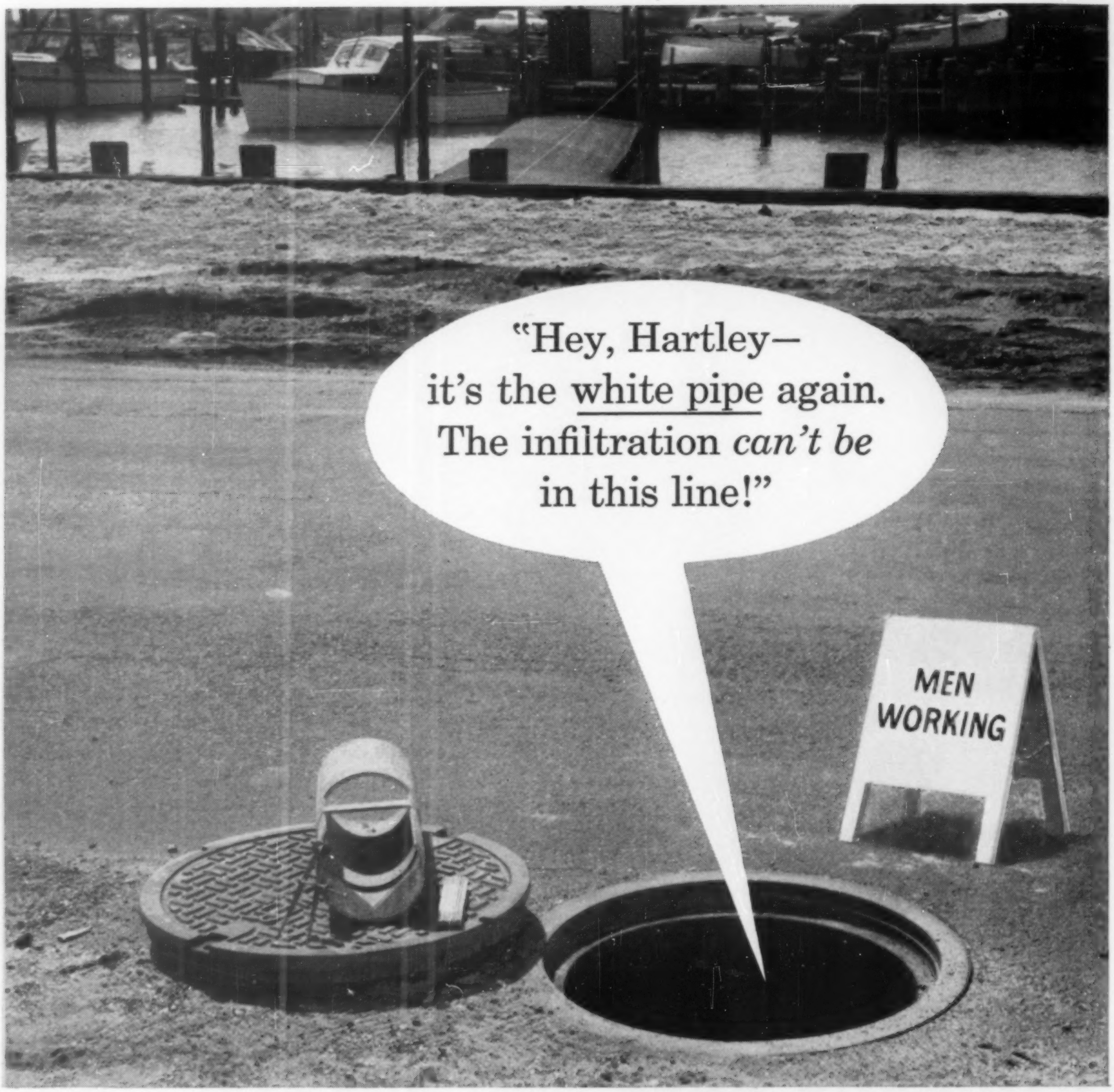
Over the years, Macks have been the core of Richmond's pumper fleet and have proved themselves time and again. At a local flour mill fire, for instance, Macks stayed on the line for 30 hours, pumping continuously. But—because they were Macks—they were more than equal to the challenge.

This is the kind of performance *you* can count on from Mack apparatus. Whatever your requirements, Mack can fill them with custom-built equipment . . . in a variety of styles including cab-forward and standard models . . . with a wide range of Mack-built engines headed by the famous Mack Thermodyne® 707C. Why not look into the advisability of adding Macks to your department? Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

7777

MACK
FIRST NAME FOR
FIRE APPARATUS

COMPLETE LINE OF PUMPERS—500 to 1250 GPM . . . SQUAD AND HOSE WAGONS . . . AERIALS 65′ to 146′ . . . COMBINATION LADDER TRUCKS

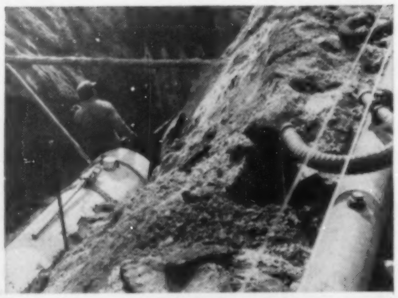


You can thank Johns-Manville's patented Ring-Tite® Joint which cuts ground water infiltration to a minimum. It's exclusive on *Transite®, the white sewer pipe.*

On a recent sewer project, specifications called for an extremely exacting infiltration test. What was the outcome? At final inspection, infiltration in the Transite line was 80% *less* than specification. What does this mean? Important savings! Volume of sewage to be treated is kept to a minimum . . . treatment plant operates as designed. The plant's reserve is conserved for future service.

Transite, made of tough, durable asbestos and cement, with its tight joints, offers many other savings. The long, light-weight lengths and sure coupling methods reduce trenching and installation costs. Transite's low coefficient of friction means faster flow and shallower trenches. Preventive maintenance with Transite will save you thousands of dollars.

Take it from Hartley—Transite can provide important economies in all sewer projects. Get all the details on Transite, the white sewer pipe. Send for your facts and data book today! Write Johns-Manville, Box 14, AC-7, New York 16, N. Y. In Canada: Port Credit, Ontario.



JOHNS-MANVILLE

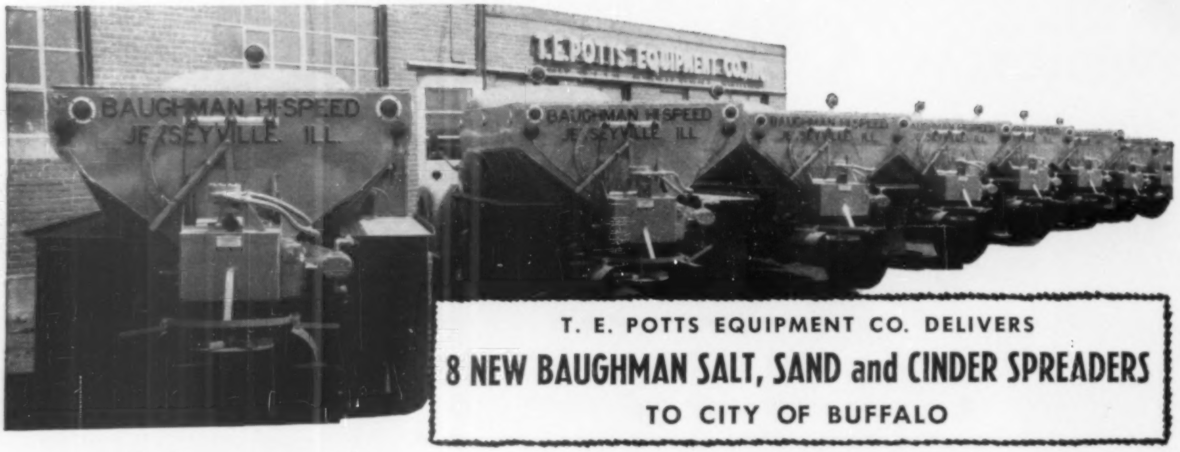
TRANSITE PIPE

JM

THE DUNCAN GALAXIE OF
OUTSTANDING PARKING METERS!
TIME EXPIRED
REGULATED PARKING
FINE O METER

UNIVERSALLY ACCEPTED AS THE MOST DEPENDABLE PARKING CONTROL EQUIPMENT EVER PRODUCED. BACKED BY OVER TWO DECADES OF ENGINEERING EXPERIENCE, TODAY'S "HEAVY-DUTY" DUNCAN-BUILT PRODUCTS OFFER TOP OPERATIONAL EFFICIENCY AT ROCK-BOTTOM MAINTENANCE COSTS PLUS GREAT VANDAL RESISTIVE STRENGTH TO COMBAT THE GROWING PROBLEM OF COSTLY METER VANDALISM. INVESTIGATE THE GENUINE ECONOMY OF DUNCAN'S DEPENDABLE OPERATION. TWO THOUSAND CITIES THROUGHOUT THE WORLD ENJOY THIS ADVANTAGE DAILY . . . WRITE TODAY .

DUNCAN PARKING METER
Division of Motor Products Corporation
835 NO. WOOD STREET • CHICAGO 22, ILLINOIS



T. E. POTTS EQUIPMENT CO. DELIVERS

8 NEW BAUGHMAN SALT, SAND and CINDER SPREADERS

TO CITY OF BUFFALO

Before you specify, consider how operating efficiency will be increased and long-life low cost performance assured, with these important Baughman ice control features:

LUBE-IMPREGNATED CHAIN DISCHARGE . . . a Baughman exclusive, positively insures greater corrosion resistance and virtually eliminates chain freezing.
TOUGHEST CHAIN DISCHARGE of any ice control body . . . total test strength of 40,000 lbs.
STRONGEST BODY MADE . . . with reinforced top edge, extended side jacks and internal bracing for full body support.
FEWER WORKING PARTS . . . less maintenance, yet positive spreading with even, quick, safe discharge.

WRITE TODAY for illustrated Bulletin A-408-B.

Better Service Through Better Engineering.
Service and Parts from 200 Service Branches.

BAUGHMAN
HI-SPEED SPREADING AND CONVEYING EQUIPMENT
AROUND THE WORLD

BAUGHMAN MANUFACTURING CO.

307 SHIPMAN ROAD JERSEYVILLE, ILL.

Where you want nothing to grow

SS WEED-KILLER

Gets them *fast*
Gets them *all*
Keeps them *off*

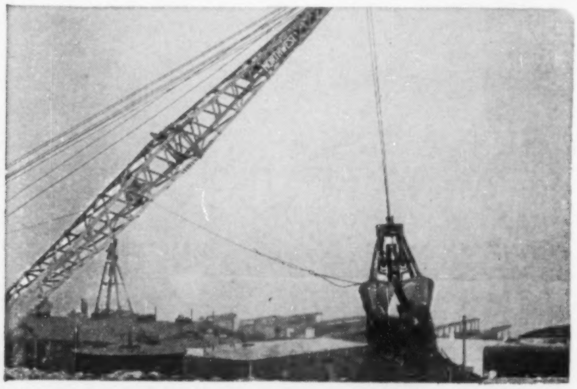
Dolge SS WEED-KILLER is deadly to any weed it hits. After one thorough application of this potent soil-sterilant, unwanted plant life can't even get started through the growing season. . . . Safeguards parking lots, terraces, drives, walks, gutters, sand traps, courts, tracks and other areas against ruinous growth. . . . Reduces fire hazard by eliminating flammable vegetation close to industrial locations. . . . Finishes such hardy pests as poison ivy, wild honeysuckle, bindweed, crabgrass. . . . Cuts ground maintenance costs drastically. . . . One gallon of SS WEED-KILLER in solution treats 1250 square feet on the average.

Write for free, up-to-the-minute booklet on weed control. See your Dolge Service Man

Dependable
DOLGE
WESTPORT, CONNECTICUT

No spot for a breakdown!

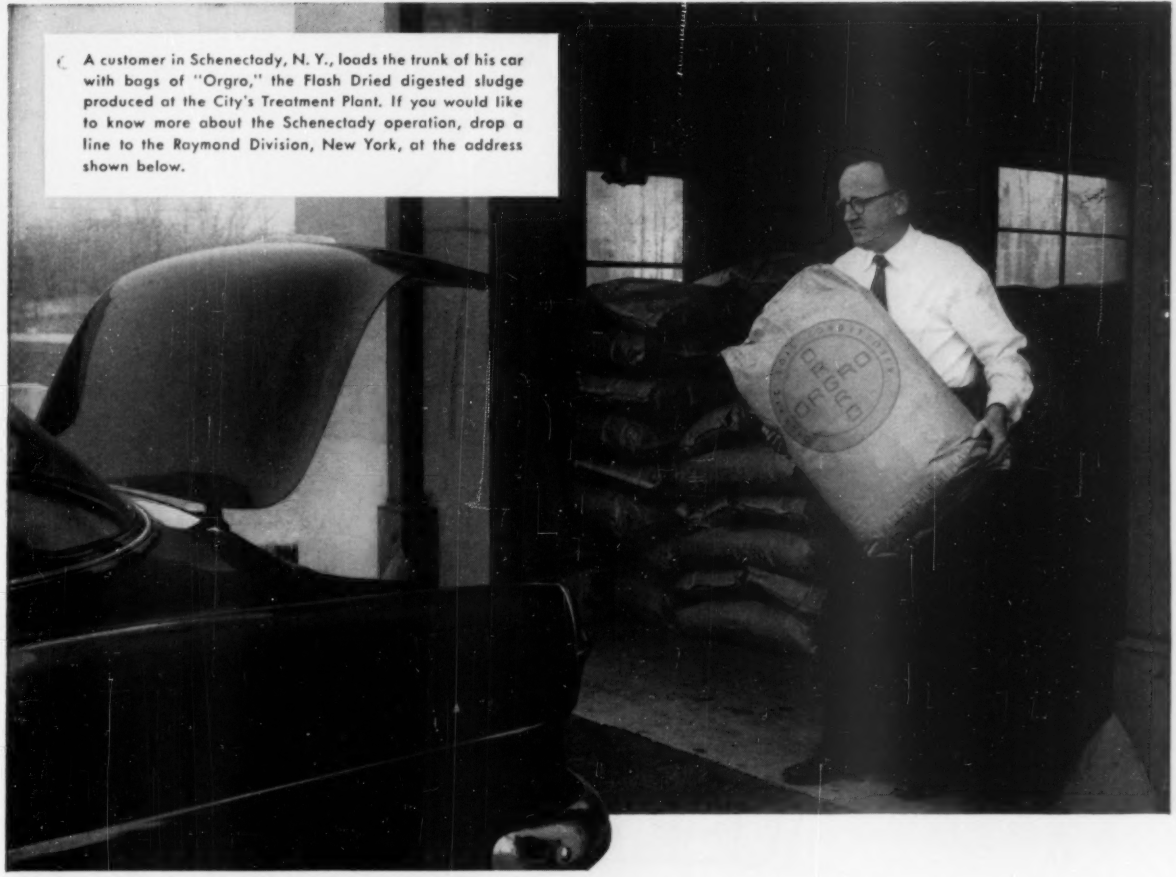
KEEP IT GOING AT ITS BEST...USE ONLY GENUINE HAYWARD REPAIR PARTS!



Hayward Buckets are designed with the most efficient construction features known. And only with *genuine* Hayward replacement parts can you be sure of maintaining that same high quality. Cheaper "bootleg" parts reduce efficiency, raise costs and disrupt schedules.

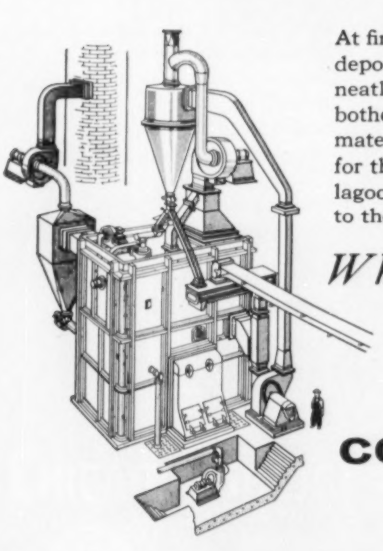
Anticipate any possible breakdown.
Write today for list of genuine Hayward parts.

THE HAYWARD COMPANY
50 CHURCH ST., DEP'T A, NEW YORK 7, N. Y.
Builders of Better Buckets Since 1888



A customer in Schenectady, N. Y., loads the trunk of his car with bags of "Orgro," the Flash Dried digested sludge produced at the City's Treatment Plant. If you would like to know more about the Schenectady operation, drop a line to the Raymond Division, New York, at the address shown below.

Can you think of a better way to dispose of sewage sludge?



At first glance, the trunk of a car may seem to be a peculiar place to deposit sewage sludge. But when the sludge is dry, sterile and neatly packaged, it can be a marketable commodity rather than a bothersome waste. When uncontaminated with noxious industrial materials, it is an excellent soil conditioner. Its sale produces revenue for the treatment plant, eliminates the nuisances of drying beds, lagoons and ash disposal and, at the same time, renders a service to the people of the community.

What's the best method of drying sludge?

It's the C-E Raymond Flash Drying System, a system used by communities large and small across the nation, a system proved in service and one which dries more filter cake than all other systems combined.

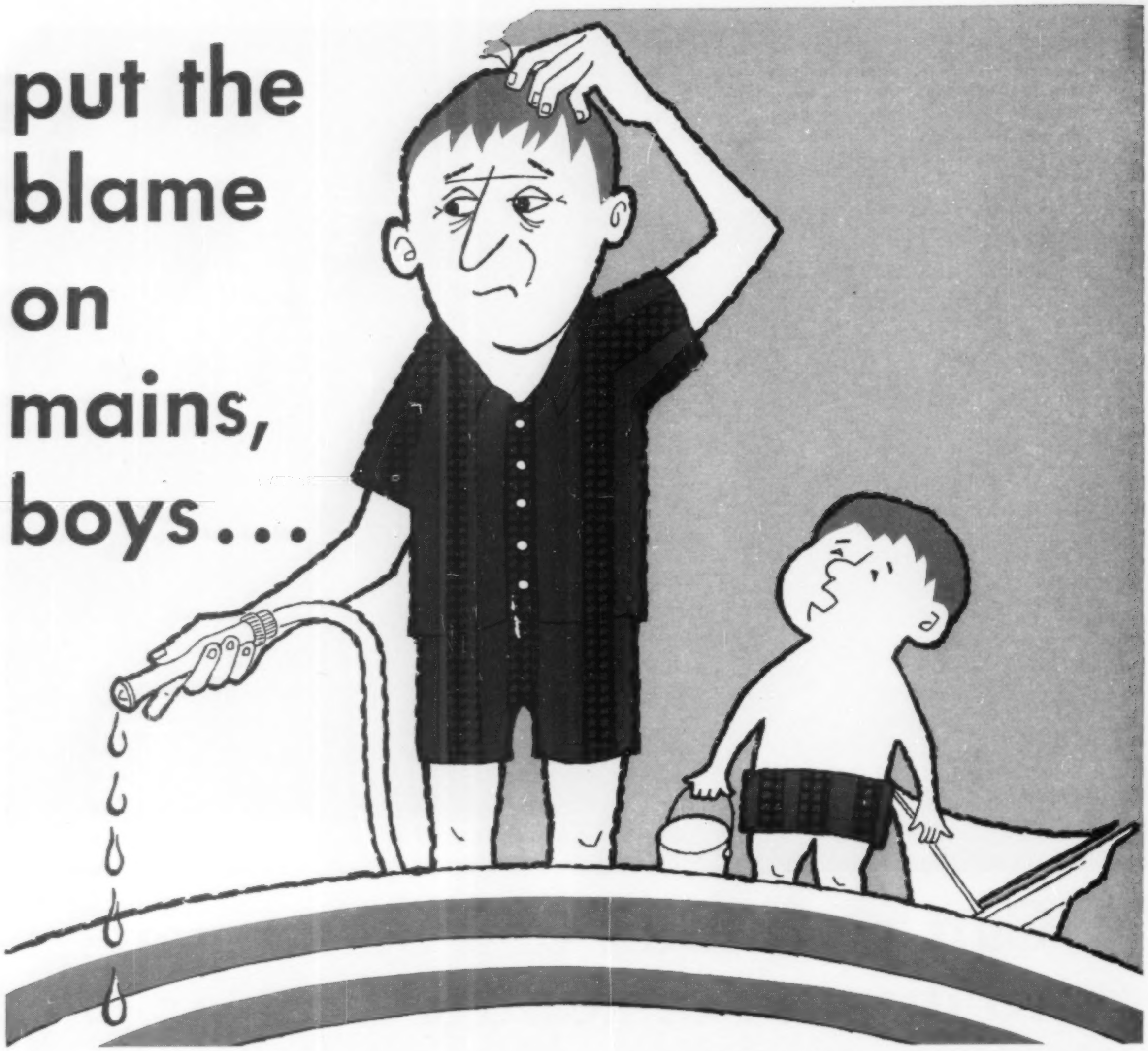
COMBUSTION ENGINEERING

RAYMOND DIVISION, 1132 West Blackhawk St., Chicago 22, Illinois
Eastern Office: 200 Madison Avenue, New York 16, N. Y.
Western Office: 510 West Sixth Street, Los Angeles 14, Cal.
Canada: Combustion Engineering-Superheater Ltd.

C-159

ALSO FLASH DRYING AND INCINERATION SYSTEMS FOR INDUSTRIAL WASTE DISPOSAL

put the blame on mains, boys...



Are you hearing customer complaints about low water pressure? After the spring's heavy rains which filled reservoirs to the brim all over the country, *there should be no water shortage*. The problem probably rests underground . . . mains and distribution grids choked by pressure-killing tuberculation and corrosion.

There's one sure cure for your pressure problem . . . the Centriline Process. Centrilining permanently increases carrying capacities in all sizes of pipe by eliminating tuberculation and corrosion forever. After loose scale and tubercules are removed from the pipe, the Centriline machine applies a smooth, uniform coating of cement-mortar to the pipe wall by centrifugal force. Fast and economical, Centrilining is accomplished with a minimum of interruption to surface traffic, since the pipes are lined in place and excavations are not required at laterals and services.

With the introduction of the new, small diameter Centriline machine, you can permanently protect all water lines from 4 to 144 inches in diameter. Send today for our new brochure which fully describes the Centriline Process.

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A Subsidiary of Raymond International Inc.

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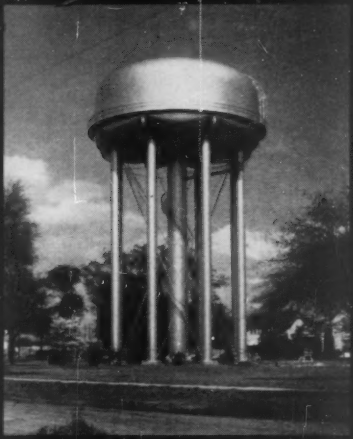
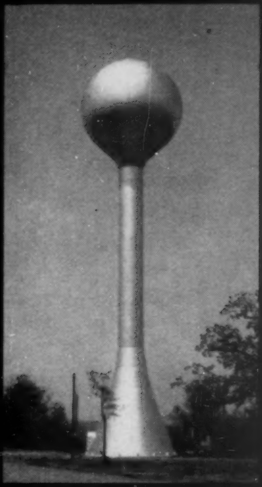
LANDMARKS OF MUNICIPAL PROGRESS...

Modern Water Storage Tanks built by

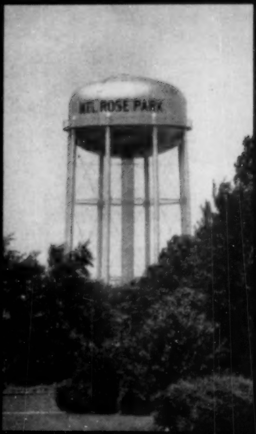
CB&I



RADIAL-CONE
Standard sizes: 500,000
to 3,000,000 gals.



WATERSPHERE
Standard sizes: 25,000
to 250,000 gals.



ELLIPSOIDAL
Standard sizes:
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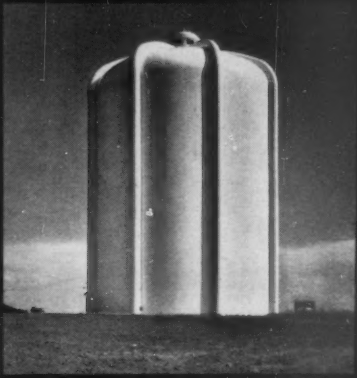
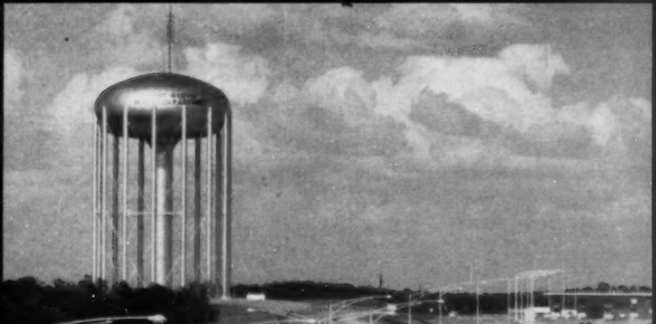
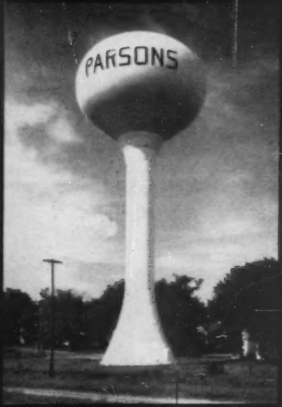


ORNAMENTAL STANDPIPE
No limit to capacity



SPHEROIDAL—Standard sizes: 200,000 to 3,000,000 gals.



WATERSPHEROID
Standard sizes: 250,000
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332 SOUTH MICHIGAN AVENUE
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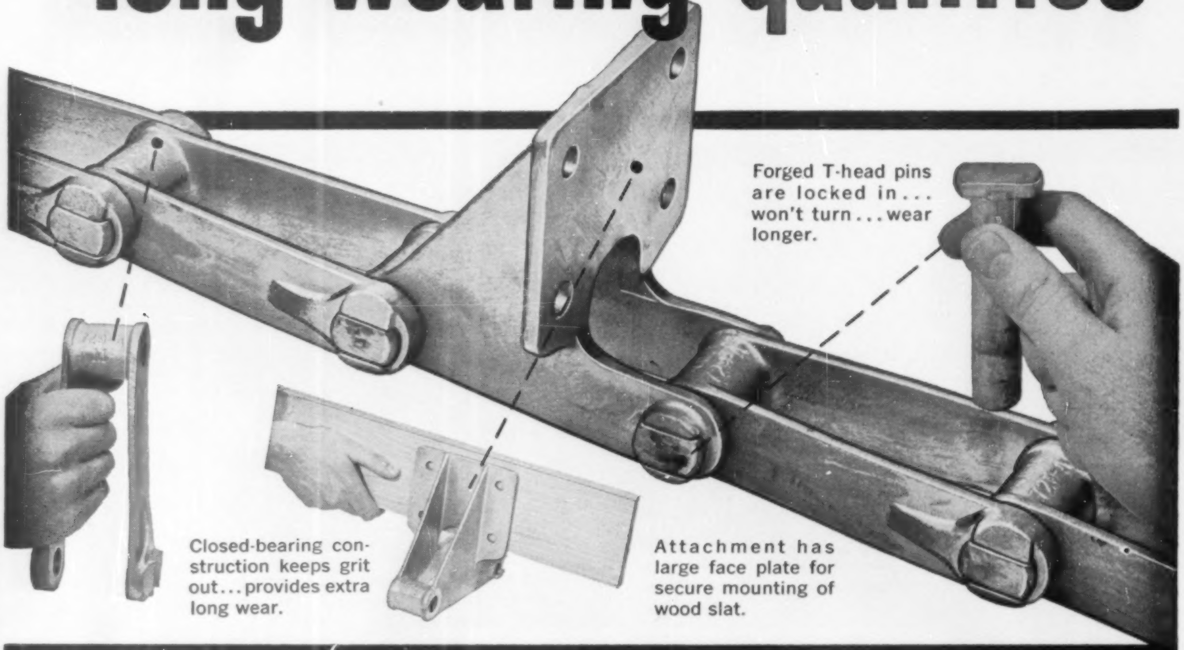
OFFICES AND SUBSIDIARIES IN PRINCIPAL CITIES THROUGHOUT THE WORLD

M62CB

Why Moline long pitch pintle chain has long wearing qualities



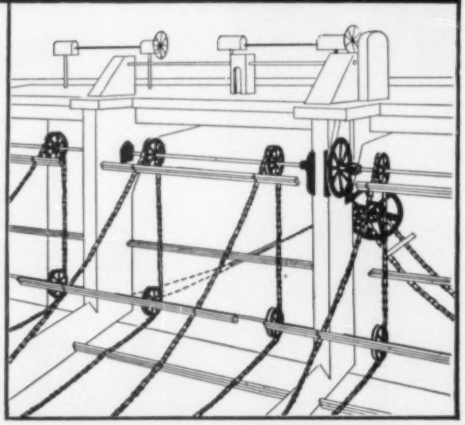
Forged T-head pins are locked in . . . won't turn . . . wear longer.

Closed-bearing construction keeps grit out . . . provides extra long wear.

Attachment has large face plate for secure mounting of wood slat.

For a serviceable, long wearing chain at a moderate price, sewage treatment plants prefer Moline Long Pitch Pintle Chain. It is designed and proportioned to provide great strength at minimum weight . . . is stronger than detachable chain and less subject to wear. Moline Pintle Chain is assembled with forged T-head pins with cotters. This construction prevents the pins from turning . . . prevents the entrance of grit . . . minimizes wear. Special analysis metal with superior corrosion resistance is available in this chain.

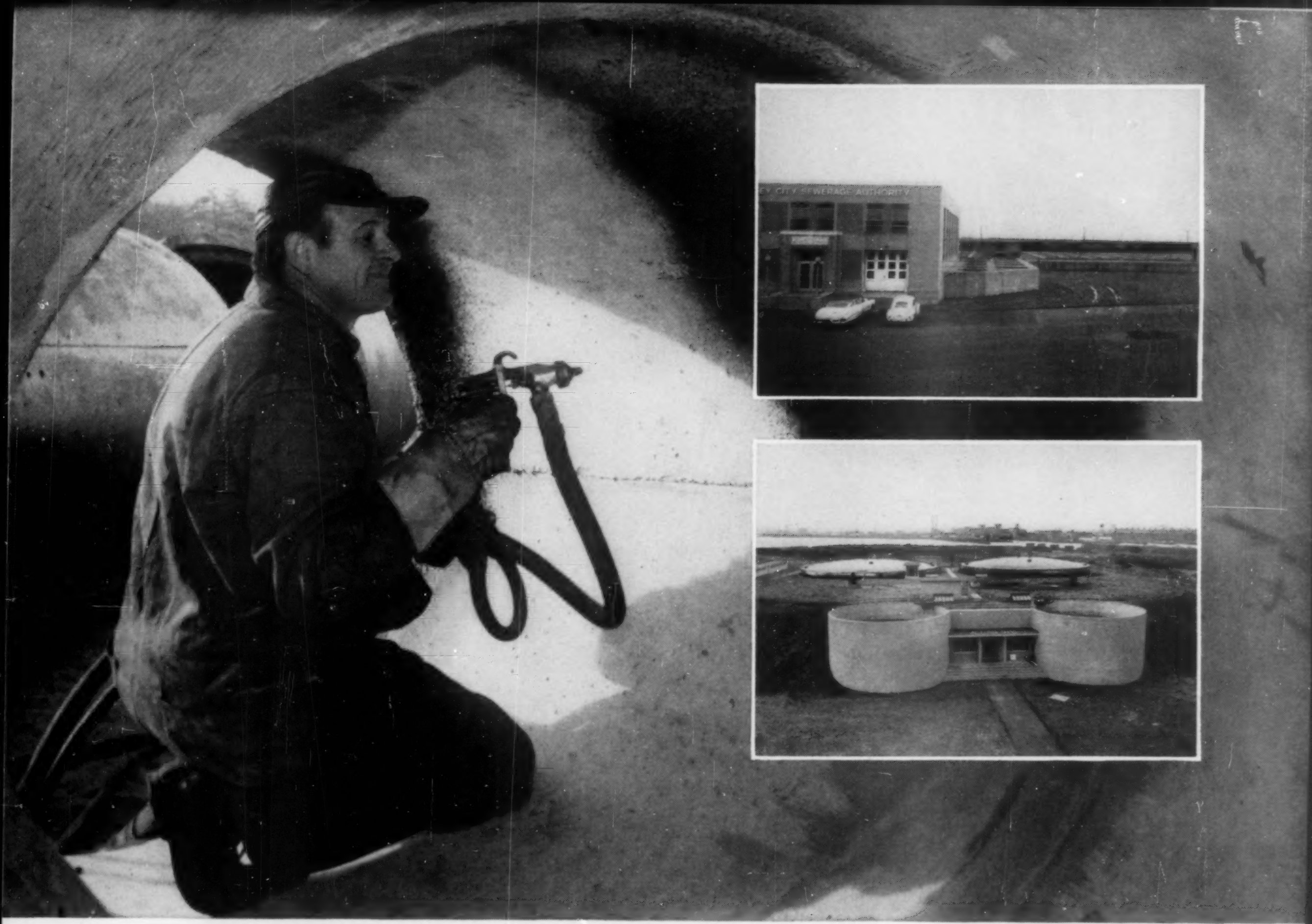
Write for information and prices or phone your local Moline representative.



LEADERS FOR 60 YEARS

Moline MALLEABLE Chains

MOLINE MALLEABLE IRON CO.
St. Charles, Illinois
Specializing in the Manufacture of Chains



In Jersey City's Sewerage System

H_2S no danger to concrete pipe protected by Bitumastic Coatings

Some 17 miles of large diameter concrete storm and sanitary interceptor lines were laid to link Jersey City's existing mains to the new East and West Side treatment plants. These plants, opened in 1957, have a design capacity of 83 mgd.

To insure maximum life from the concrete pipe used in the lines, Clyde Potts Associates, consulting sanitary engineers for the Jersey City Sewerage Authority, specified that the pipe be given two coats of Bitumastic Super-Service Black on all interior surfaces. This was done in the yards of the pipe suppliers: Lock Joint Pipe Co., and the American Concrete Pipe and Universal Concrete Pipe Companies, now part of American-Marietta. The sprayed applications of this coal-tar coating filled and sealed the concrete, increasing its impermeability to raw sewage.

According to Mr. James Dolan, Superintendent and Chief Engineer of Jersey City's system, "Periodic inspections of the lines have shown no failures of the protective coating system or sewer gas attack on the pipe."

Wherever concrete or metal surfaces are exposed to sewage gases, sanitary engineers have found that tough, impervious Bitumastic coatings solve the problem of corrosive attack.

SEE OUR CATALOG IN SWEET'S
OR WRITE FOR COPY

Koppers has published a helpful brochure on sewage plant protection that's yours for the asking. Koppers Company, Inc., Tar Products Division. District Offices are located in Boston, Chicago, Los Angeles, New York, Pittsburgh and Woodward, Alabama. In Canada, Koppers Products Ltd., Toronto.

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Gentlemen:

I'd like a copy of your brochure on sewage plant protection.

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Firm or Authority__________
Address__________
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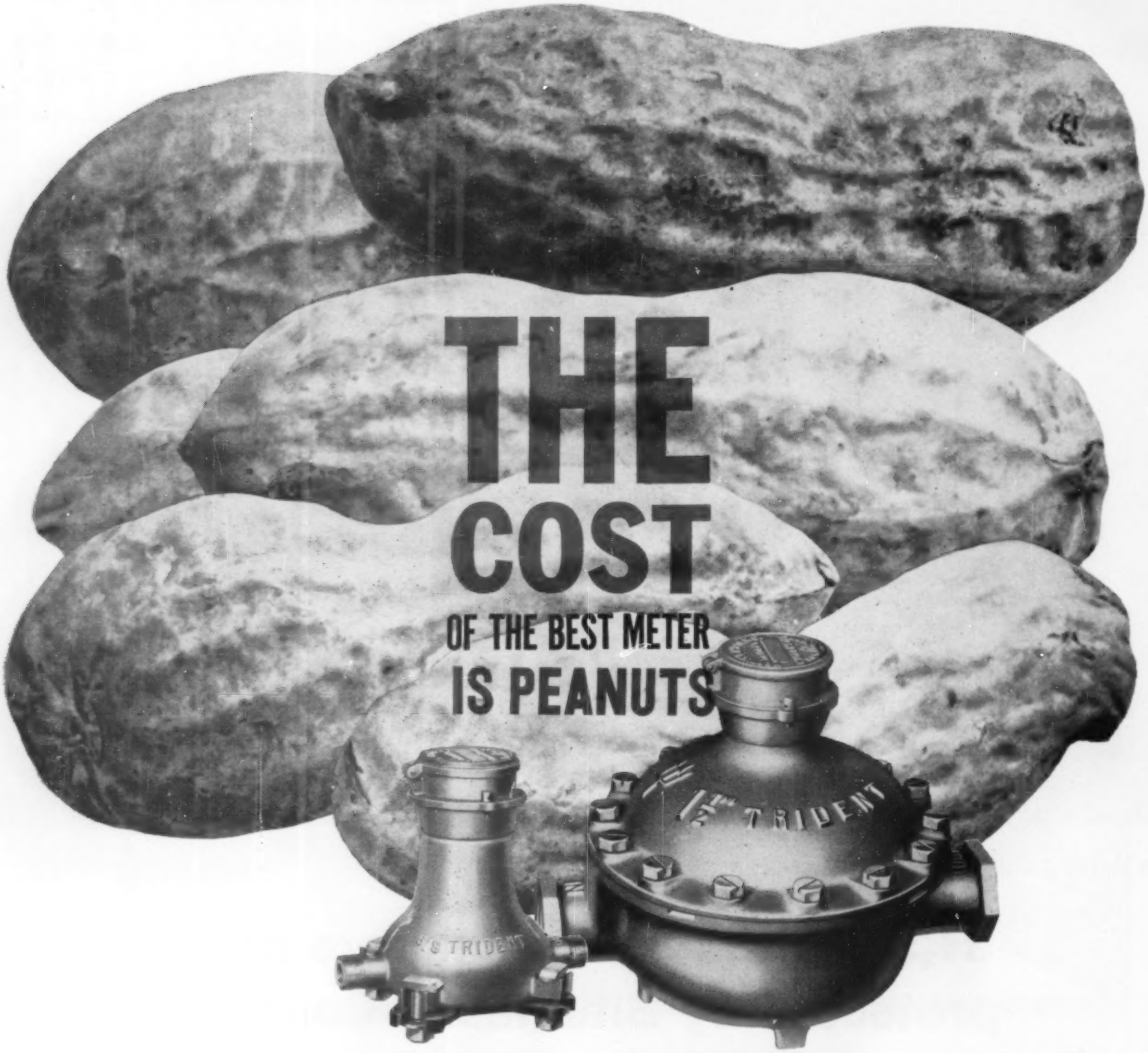

THE COST OF THE BEST METER IS PEANUTS

COMPARED TO THE MONEY IT EARNS

Figure it this way: ■ Write down the revenue you earn each year from the average meter: $________. Now multiply this by seven (the number of years many Commissions permit a meter to stay in service before retest) or by the number of years required by *your* local regulations. ■ What have you got? $________. A figure somewhere in the neighborhood of $350 to $700? That's the money you entrust to just one water meter while your back is turned. That's the money it earns, twelve to twenty times its price. ■ Like any instrument, a meter runs slow as it wears, and gives water away before it is brought in for test and repair. Now if *one* meter, by virtue of better design and workmanship, stays accurate and brings in just 1% more revenue over the years, how many extra dollars is that worth to you? $3.50? $7.00? ■ That's how much more you could afford to pay for a Trident water meter. ■ There's extra value, too, in Trident's interchangeable design. New Trident parts fit old Trident meters. This "no obsolescence" feature insures automatic modernization, keeps repair costs down and protects your meter investment. Ask your Neptune representative for the facts.

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LIQUID METER DIVISION

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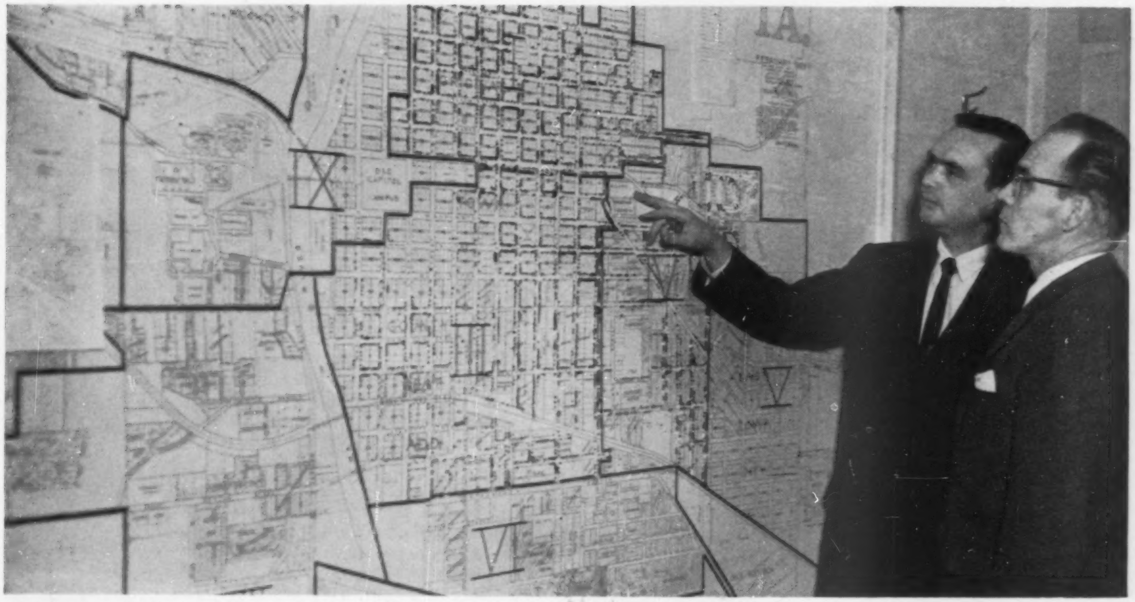
JULY 1960 The American City



This map, which City Forester Raymond R. Bruns and City Manager Peter F. Roan are examining shows the location of every tree in the city.

A Municipal Tree Census

. . . is the first step towards a workmanlike tree-maintenance program

By **R. R. BRUNS***
City Forester
Iowa City, Iowa

Even in a small city, trees are a measureable, multi-million dollar investment. We can place an impersonal, objective value of $4,193,580 on the street trees in Iowa City, which represents sound, conservative calculations. We can place an emotional, subjective value of astronomical heights, depending on how fond one is of a particular tree.

In any case, this is an investment worth saving and maintaining. Street trees work for a community. They reduce wind velocities, muffle traffic noises, purify the air, provide cooling shade, and add color and beauty to any location.

Protect Investment

The investment suffers principally because of low-hanging branches and improper location of trees so that they interfere with traffic and utility wires. It loses value and becomes a hazard because of visible dead branches, and crowded plantings.

To develop a good tree program to protect an investment such as this, one first must conduct a tree census. An adequate tree census involves:

- **species**
- **exact location**
- **height**
- **diameter 4½ feet above ground**
- **grading the trees, such as A, B, C, etc.**
- **marking for pruning, spraying or removal**

We feel that one should count the trees on private property, as well as the street trees, in order to get a ratio between the two and to indicate the preferences of the people in past plantings. It gives us a

---

* Mr. Bruns graduated from the University of Missouri in 1951 with a degree in Forestry. Before joining Iowa City in May, 1959, he managed his own shade tree service for over seven years.

Graceful tree-lined streets like this have a calculable multi-million dollar value to Iowa City.

This insecticide blower is the heavy artillery in Iowa City's defense against the Dutch Elm blight.

better idea of the problem facing the city when something like Dutch Elm disease arrives.

Our tree census indicates that 5,139 trees are marked for pruning; 4,363 for spraying, which includes 4,021 elms that will receive a dormant DDT spray for Dutch Elm disease prevention; and the removal of 439 trees.

In addition, we have 364 stumps, extending from 3 to 36 inches above ground, that need removing. Stumps are unsightly, are hazardous to pedestrians, and offer a breeding place for Dutch Elm bark beetle.

Evaluation

How do you evaluate a tree that has taken 25 to 100 years to reach a size that gives us service, beauty and utility? It can be done, by considering three basic factors: size; kind or species, and condition of the tree. The National Shade Tree Conference gives us a valuation rule of $5 per square inch of trunk cross-section at a point on the trunk 4½ feet above the ground. This is a good figure for our area.

Of course, not all trees are perfect specimens. We designate the best trees as Class A, or 100% perfect; Class B, with some defects but still basically sound, or 80% perfect; and Class C, as undesirable trees with little or no value.

Moreover, not all species and varieties are of equal value. Therefore, we segregate them into groups based on relative value using recommendations of the National Shade Tree Conference as a guide. Our value groupings run as follows:

***Group 1*, 100%—hard maples, oaks, purple beech, Kentucky coffee tree.**

***Group 2*, 80%—ash, sycamore, black walnut, gingko, chestnut, common hackberry, hickory, tulip tree.**

***Group 3*, 60%—Ohio buckeye.**

***Group 4*, 40%—birch, wild or black cherry, locusts, redbud.**

***Group 5*, 20%—soft maples, ailanthus, mountain ash.**

***Misc. Group 1*, 50%—all elms except Chinese.**

***Misc. Group 2*, 0%—cherry and plum fruit trees, apples, pear, spruce, pine, fir, arborvitae, junipers, Chinese elm, poplars, cottonwood, box elder, willows, mulberry, Osage orange, catalpa, sumac.**

Of Iowa City's street trees, its 4,200 elms represent more than two-thirds of our $4,200,000 street-tree value. Our 995 hard maples account for 9% of this value; our 721 ash

and 216 oak, 6% each. The balance of the value is scattered among the remaining various trees.

Maintenance Program

Obviously, if two thirds of our value is wrapped up in elms, a big part of our work has to be directed toward preventing the Dutch Elm blight from destroying these trees. It can be done. The first and big step is the application of a dormant DDT spray. The second is to remove the source of contamination. The beetles breed in dead or dying elm wood. We can eliminate their breeding places by a thorough tree maintenance program among municipal street trees and by enforcing present ordinances that make removal of such dead trees the responsibility of the owner.

For our defense against the Dutch Elm blight, we use a John Bean Rotomist to apply the dormant DDT spray. This program started last September. We also anticipate using the same blower for mosquito control, and plan to experiment with it in blowing leaves together for collection in public parks and cemeteries. Some cities have enjoyed good success with it for this purpose.

In general, the public gives a limited amount of cooperation. Many residents call us about the sickly appearance of their trees, at this time generally due to Black-Leaf Spot and Anthracnose, rather than the Dutch Elm disease. When they find that the trees do not have the latter problem, most simply stop maintenance. We know that with an aggressive program of maintenance, the blight can be held back; however, this requires the cooperation of an interested public.

The Illinois cities of Barrington, Geneva, Glencoe, Lincolnwood, and Oak Park, all in Dutch Elm blight districts, consistently hold their losses of elms to 1% or less. A nearby city without such a program, annually loses almost 20% of its trees.

Pruning

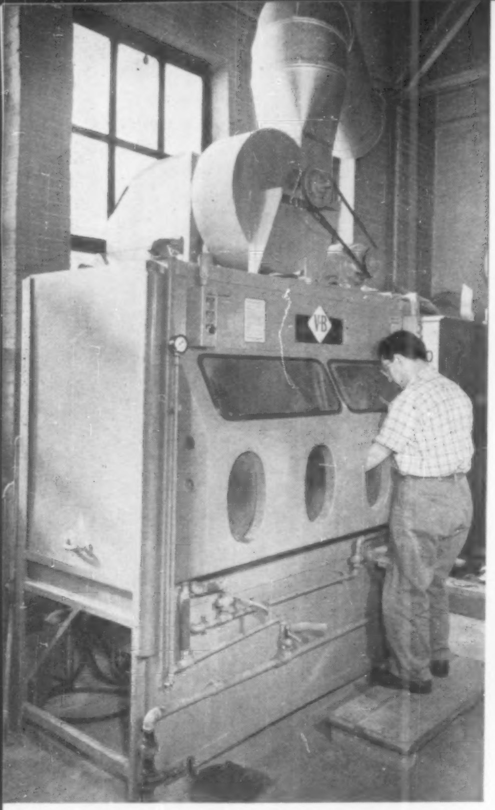
A pruning program must make one complete round of the street trees every four years. This work should include removal of all dead and dying limbs, removal of weak cross branches, and trimming to allow free passage of pedestrians and vehicular traffic. Such work should permit eight to ten feet of clear passage over sidewalks, and 12 feet over streets except principal arterial streets, which should have a clearance of about 16 feet. It also should include installation and maintenance of drains in elms for the treatment of wetwood disease, a problem not to be forgotten.

A tree-maintenance-and-removal program in Iowa City would require an annual cost of some $38,000. Of this, about $8,000 would be devoted to control of the Dutch Elm blight by sprays. The balance would run somewhat as follows:

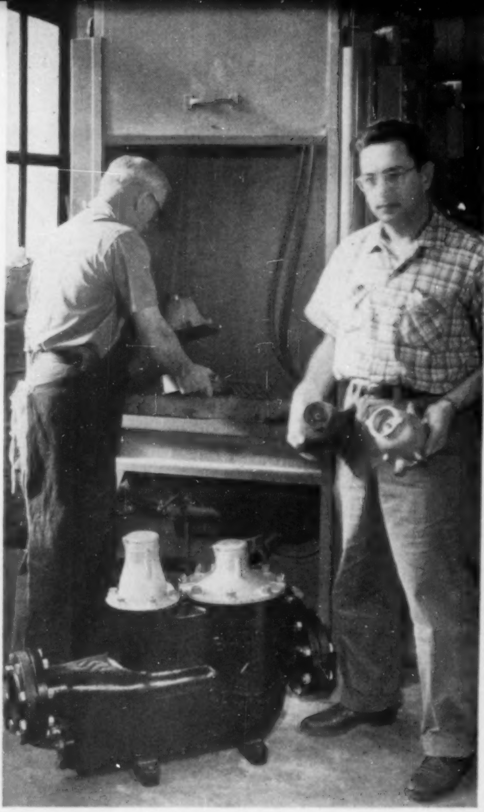
ORIGINAL COST	
Two power saws	**$ 700**
Climbing ropes, saws, belts, etc.	**500**
Stump remover	**300**
Truck, dump bed	**2,800**
Truck, pick-up	**1,700**
Brush chipper	**2,000**

ANNUAL COST	
City Forester and four men	**$22,374**
Social security, insurance	**5,646**
Depreciation and repair	**2,140**
Total annual cost	**$30,160**

As nearly as we can calculate, this means that a municipal crew can do this work for about $23,000 less than a private contractor, each year. To place a further value on the work, we can assume that a Dutch-Elm-disease-control program would keep the annual tree loss to no more than ½% of our elms. At a rate of $45 per tree for removal, this would mean that the city would have an annual expense of $900 to remove about 20 trees. However, if we have no control program, we can expect to lose about 15% of our elms per year. This would mean a loss of about $37,000 per year, as long as the trees last. ◄◄



Operator safety and flexibility are two of the advantages built into the Vapor-Blast liquid honing machine. This unit is equipped with dual controls for one- and two-operator meter cleaning.



Small disc meters comprise the bulk of the cleaning operations but, with the center partition removed, large compound meter (foreground) and hydrants are accommodated. Worker (left) loads the machine.

Milwaukee Vapor-Blasts Water Meters

Revamped meter service helps Milwaukee Water Works prepare for additional water demands

By **ARTHUR RYNDERS***
Water Works Supt.

The keynote at the Milwaukee Water Works is expansion and foremost in that expansion is the recent streamlining of its meter-servicing department. With burgeoning water demands from the city and its suburbs, cleaning efficiency, better working conditions and shop cleanliness had become urgent.

One of the first operations in the streamlining of this department was to study the older method of meter cleaning which involved acids, solvents, wire brushing and scrapers. Officials long had recognized the inefficiencies and hazards of the old method and the study stressed the need to find a better way. Protection of personnel against acids, solvents and other odorous and uncomfortable conditions was an increasing problem. Also, the acid bath used by Milwaukee left a mottled and discolored appearance that immediately labeled the meter as repaired.

Water users in the home and industry were unimpressed by a replacement meter that was obviously "used." To provide customers with a meter that appeared to be new, officials of the department considered painting repaired meters. This idea was rejected.

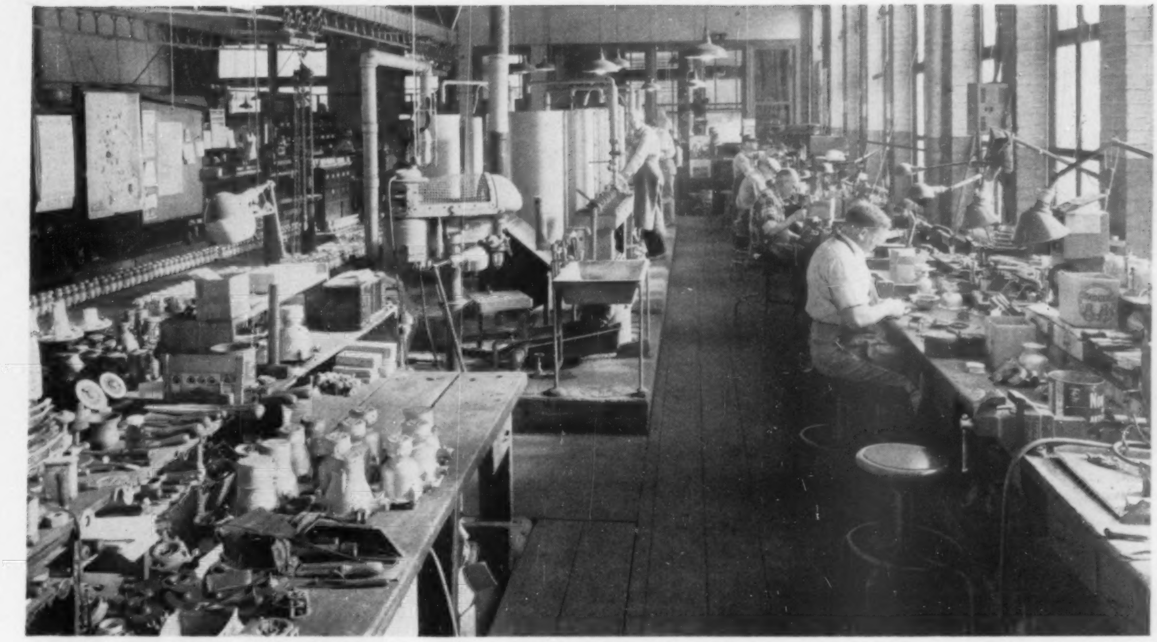
Then Vapor-Blast Mfg Co., a Milwaukee concern, was invited to demonstrate a Vapor-Blast liquid honing machine that is widely used in industry to de-scale, clean and surface-finish metals. It was believed that the same equipment might solve Milwaukee's meter-cleaning problem.

The demonstration proved so satisfactory that a machine was purchased. The machine is self-contained and is divided into two interior compartments, 36 inches square, permitting two operators to work simultaneously. With the partition removed, larger compound industrial meters can be cleaned.

The liquid honing process is a method of suspending abrasives in solution and forcing it at high velocity with compressed air through special nozzles against the surfaces to be treated. The one-operation cleaning by the Vapor-Blast equipment, compared with the many in-

---

* Mr. Rynders, who holds BSME and ME degrees from the University of Wisconsin, has been with the City of Milwaukee for 36 years. He spent three years in the U. S. Navy (CB). Superintendent of the water works for four years, he is a member of ESM, AWWA, ASME and ASCE. Mr. Rynders wishes to acknowledge the assistance of Mr. Robin Middlemas, Supervisor of Meters, in preparing this account.



Mint-new meters are assembled and tested in this part of the well-equipped shop of the Milwaukee Water Works meter-repairing department.

dividual steps required by the old method, left no doubt about its time-saving feature. Greatly increased safety and the elimination of acid-handling equipment increased its value to the department.

One advantage of the new cleaning process is that it is now possible to put into effect a systematic replacement program which long had been discussed but which had been impractical under the old system. The like-new appearance of the cleaned meters after liquid-hone cleaning assures universal acceptance by residential and industrial customers. Improved customer relations is another advantage brought about by the cleaning and replacement program.

Delivery of a meter that looks like new and operates like new has pleased water customers, especially when they are informed that its delivery is part of a regular ten-year replacement program to insure peak meter efficiency.

Replacement

The ten-year replacement program has several advantages. Meters will be serviced before they are in need of costly major repairs. Meter wear depends upon usage and condition of the water. In Milwaukee's experience, a meter may last 15, even 25, years. The meter department recently removed a meter that had been in service for 45 years.

Replacement, testing, overhauling, cleaning and repairing meters after only ten years will enable the department to put them back in peak condition at the least possible expense. The department estimates that the program of cleaning and repairing will save as much as $100,000 in lost annual revenues.

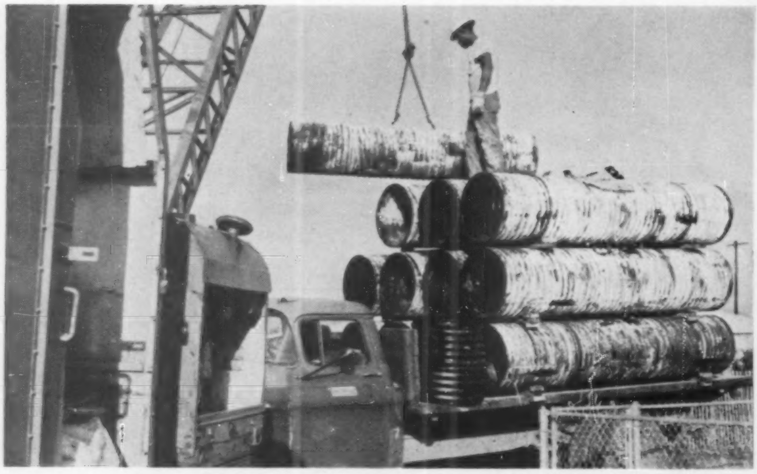
The V-B machine cleans a meter and all parts in about five minutes. The total time involved is about ten minutes per meter on an assembly-line basis. The department must average 50 to 60 meters per day to keep pace with the replacement program. The cleaning section is set up to provide 14,000 reconditioned meters every year.

Meters are given a flow test before reconditioning, then they are disassembled and cleaned. After cleaning, parts are checked by gauges and visual inspection to determine necessary rebushing, new packing or replacement of other parts needed. Then the meter is tested again to meet new-meter standards. Upon completion, the meter is set aside for replacement use when and as needed.

Production planning involves primarily the small disc-type meter, but compound and turbine-type meters can be handled with a minimum of machine preparation. The Milwaukee Water Works uses meters manufactured by almost every well-known company and all respond to the new cleaning method.

A wide variety of abrasives will handle any cleaning or finishing requirement. Two seem particularly adaptable to meter cleaning. A spherical abrasive, called Briteshot 1160-BSVB, cleans and imparts a lustrous finish at the same time. This is used on all components of the meter with the exception of the cast-iron frost bottom. This element is most prone to heavy contamination—rust. To remove the deposit of scale and rust, special quartz abrasive 140-QVB with greater cutting action is necessary. A full charge of this abrasive is used to clean all cast-iron parts. The Briteshot can be used over and over for 100 to 150 hours. The quartz has from 30 to 40 hours' working life.

With the meter servicing department refurbished and meter cleaning problems solved, the Milwaukee Water Works next plans a new type of control center that will centralize information from operating departments by means of dials, recorders and other readily checked equipment. Expansion and modernization will continue throughout the organization, assuring the city and its neighbors an adequate water supply for many years to come. ◄



Liner sections (Armco coated corrugated pipe) are swung from a truck . . .

→

. . . lowered into a shored 10x18-foot pit, strapped to forward segment . . .

A 20-Year Sewer At One-Third the Cost

Monroe, La., gets new pipe performance at a bargain price by lining old sanitary sewer mains with corrugated metal pipe

By **THOMAS M. KELLER**
City Engineer

The use of corrugated metal pipe to repair 16,000 lineal feet of deteriorated sanitary sewer is saving Monroe, La., some $1,300,000. And the total bid price of $655,029.50 includes new manholes in the system.

Monroe has been plagued by numerous failures along the length of its gravity-outfall sewer. Constructed in 1921, the 30-inch, 33-inch and 36-inch reinforced-concrete pipe traverses diagonally across the southern part of the city, passing under private property and numerous houses.

The cost and nuisance of past emergency repairs, recurring failures and the possibility of subsequent failures affecting private property led city officials (Mayor W. L. Howard, Commissioner of Finance H. W. McSherry and Commissioner of Streets and Parks W. D. H. Rodriquez) to retain Ford, Bacon & Davis, Inc., New York engineers, to evaluate the condition of the existing sewer and to recommend the most practical means of eliminating future hazards.

Corrosion

Investigations disclosed severe corrosion throughout the entire length of the concrete pipe sewer. Pipe joints, pipe ends and joint materials were particularly deteriorated, joint alignment was very poor and existing manholes were in hazardous condition. The firm recommended immediate action to protect the city from future failures.

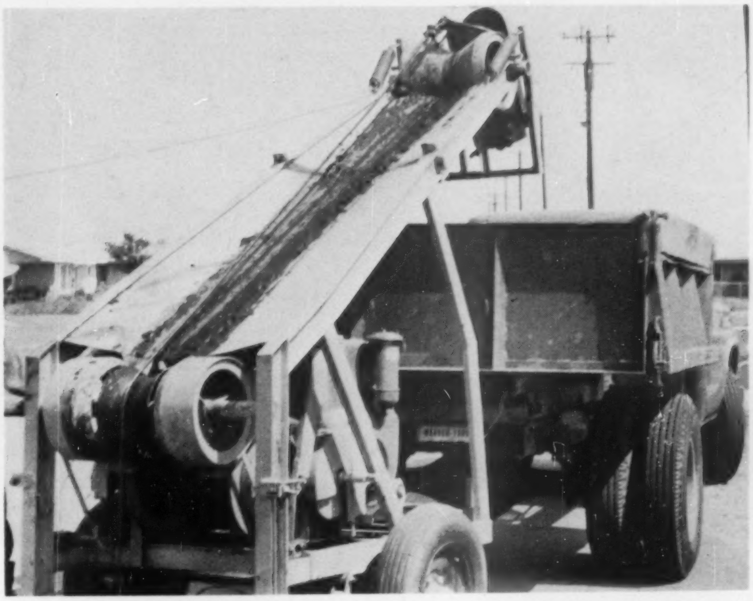
Abandonment of the existing sewer and construction of a new outfall line generally parallel to it—but on public property—was the first consideration. An alternate method was to repair the existing sewer by lining it with corrugated metal pipe and rebuilding existing manholes.

When estimates of the two methods indicated that the existing sewer could be lined and new drainage structures built for approximately ⅓ the cost of a new sewer, the firm recommended relining.

The city's commission council incorporated funds for the project into a proposed public improvement bond issue. It was sponsored by a local citizens' committee and the sewer bond issue was approved by the electorate in the fall of 1958.

Bids were received on April 26, 1959, with Roland Construction Co., of Alexandria, La., the low bidder; work began shortly thereafter.

Repairs consist of pulling the corrugated metal pipe liner—with a diameter six inches smaller than the concrete pipe—into the existing sewer. To increase the flow efficiency and to add protection against corrosion, the corrugated metal pipe is completely "paved" to a smooth interior. As the metal pipe is drawn into position in the existing sewer, a space is left between the metal and concrete pipes. This space then is filled with gravity-placed mortar grout. The sewer system of Monroe was supplemented in the past by the installation of a force-main outfall sewer that serves the new and the future subdivisions of the city. Even with decreased flow area, therefore, the repaired sewer will be adequate for its future anticipated flows.



. . . and the whole line is drawn into place by a trailer-mounted winch.

Construction Procedure

Shafts approximately 10 feet x 18 feet are sunk around alternate manholes. The section to be lined is isolated from sewage flow and cleaned. Ten-foot lengths of Armco asbestos-bonded, bituminous-coated, corrugated-metal "Smooth-Flo" pipe are joined together with external bands and pulled into the pipe by a winch, until the 100 feet of pipe have been coupled together.

The 100-foot length is then pulled into final position. In areas of extremely bad alignment, built-up sections are shortened to as little as 50 feet in length to facilitate passage around particularly sharp bends and sags. As succeeding sections are pulled to final position, they are joined to in-place sections by means of internal pressure bands.

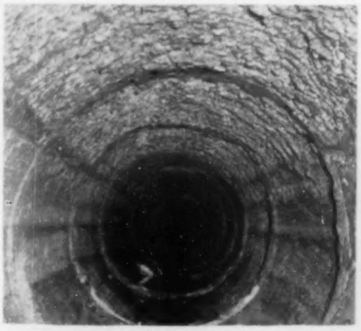
When an entire run between manholes has its new lining in place, bulkheads of quick-setting mortar are placed between the metal pipe and concrete pipe at exposed ends. Vent pipes are cast into the bulkheads to allow air and water to escape.

When the bulkheads have cured, grout is introduced to the space between the liner and existing sewer pipe through eight-inch holes drilled from ground level down through the upper shell of the concrete pipe prior to insertion of the liner. These holes are cased with steel pipe, and grout is fed directly from mixer trucks, by gravity, into the sewer. On the normal sewer run, (300 feet between manholes) three such shafts are placed.

Grout is introduced at the center shaft first and is continued until mortar is backed up to ground level. By this time, grout usually has covered the liner at—and risen slightly into—the adjacent shafts. Grout is then introduced into the adjacent shafts until a full stream of grout issues from the vent tube at the top of the bulkhead at the manhole. The vents then are plugged, and the grout is raised to ground level in all shafts.

Sewer Depth

The depth of the sewer ranges from 15 feet to 25 feet below grade. The grout, therefore, is placed at a pressure head in excess of 15 feet of water. In each ten-foot section of liner pipe, two-inch inspection couplings—placed during the manufacture of the liner—are used to check on the method. These have indicated that the space between the metal and concrete pipes is completely full in every case.



After all the liners are in place and grouting is completed in the space between the Armco pipe and the old reinforced concrete section, the inside is paved smooth to the springline.

Some 30 laboratory test mixes were furnished by the contractor to determine a satisfactory job mix. Strength requirements demanded low water content but a mix that allowed grout to move laterally through the sewer was important. The mix was varied considerably through the first few manhole runs, but finally a mix was obtained that provides the flow, non-segregating, non-shrinking and strength characteristics desired.

When lining is completed in two directions from a manhole, the new manhole is built and a minimum of six inches of concrete is poured around the exposed metal pipe. (At least 15 feet of longitudinal opening is necessary for insertion of the ten-foot metal sections). Backfill and street repair are completed after the new manhole and concrete are fully cured.

Monroe officials say that this repair, intended to eliminate the hazard of future sewer failures, will extend the useful life of this outfall sewer more than 20 years, based on service records of similar metal pipe structures in sanitary or more corrosive uses. Flow through repaired sections indicates that improved flow conditions and elimination of infiltration will offset the area lost through the reduced diameter of the outfall pipe. ◄◄

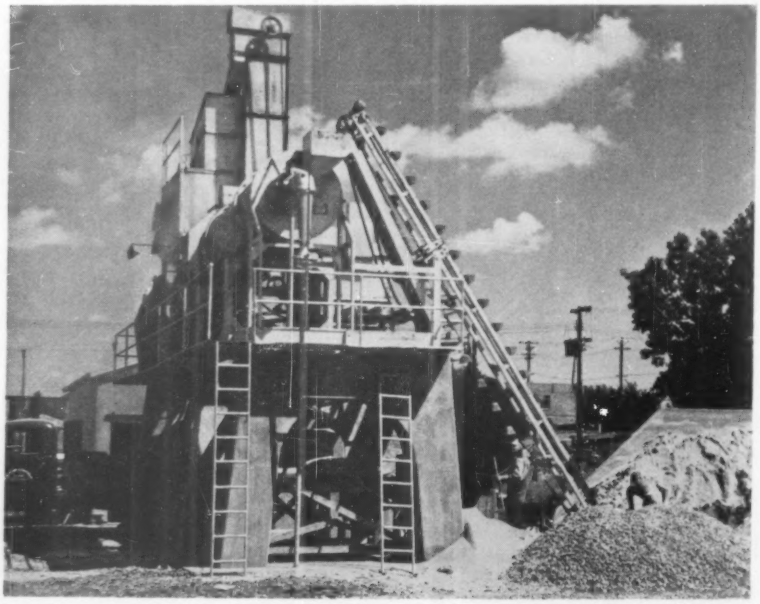
Winter break-ups such as these cannot wait for warm-weather resurfacing work but must be given immediate attention.

Years of experience has shown that hot-mix asphalt provides the best results even for temporary patch repair.

Holes Patched to Last

. . . with hot-mix asphaltic concrete placed according to a time-tested procedure

By **LYLE GIESEKER,** Superintendent
Street Maintenance Dept., Lincoln, Neb.



Lincoln operates its own 20-ton-per-hour asphalt plant to expedite street repair and resurfacing work.

Severe midwestern winters make street repair work in Lincoln, Neb., a year-round operation. Although patching pot-holes is a time-consuming job, the work cannot wait until warm weather for resurfacing crews. The next best thing is to patch the holes quickly, but well, with a hot asphaltic mix. We consider such repair work basically an emergency measure, but properly done, many patches made even in winter hold up without further attention for several years.

Immediate Attention

The responsibility for maintaining the city's 440 miles of streets and alleys rests with the Street Maintenance Division under the overall direction of Public Works Director D. L. Erickson. During the peak of the repair season, the department will utilize six major city crews plus some private contractors. However, it is the repair of small breaks promptly and properly that helps keep down expenditures on the bigger repair jobs, for once an area is broken so as to permit the entry of water, especially during freezing weather, large failures will result.

After years of experience, sometimes the hard way, we developed the following successful program for patching asphaltic-concrete streets:

1—When minor breaks develop the

department checks the street carefully and submits a detailed report and suggested repair program to the City Council.

2—Upon approval, a street-repair foreman outlines with chalk the extent of repairs to be made and pot holes and other breaks are then removed by air hammer to a point beyond the distressed area; the area is trimmed and squared to permit a firmer and neater patch.

3—Workmen clean all dust and loose material from the base and surrounding pavement before placing patch material.

4—A tack coat of pure hot asphalt is applied to the base and also painted along the edges of the opening in order to bind the patch to the old pavement.

5—Hot plant-mix is placed in the hole by means of shovels and rakes and the patch thoroughly compacted with a Ferguson three-ton portable roller.

6—After rolling, the workmen again paint the edges with pure asphalt and iron it to further seal the patch.

7—Periodic checks are made of the patch, followed by immediate attention if it is discovered that even minor cracks appear.

Municipal Asphalt Plant

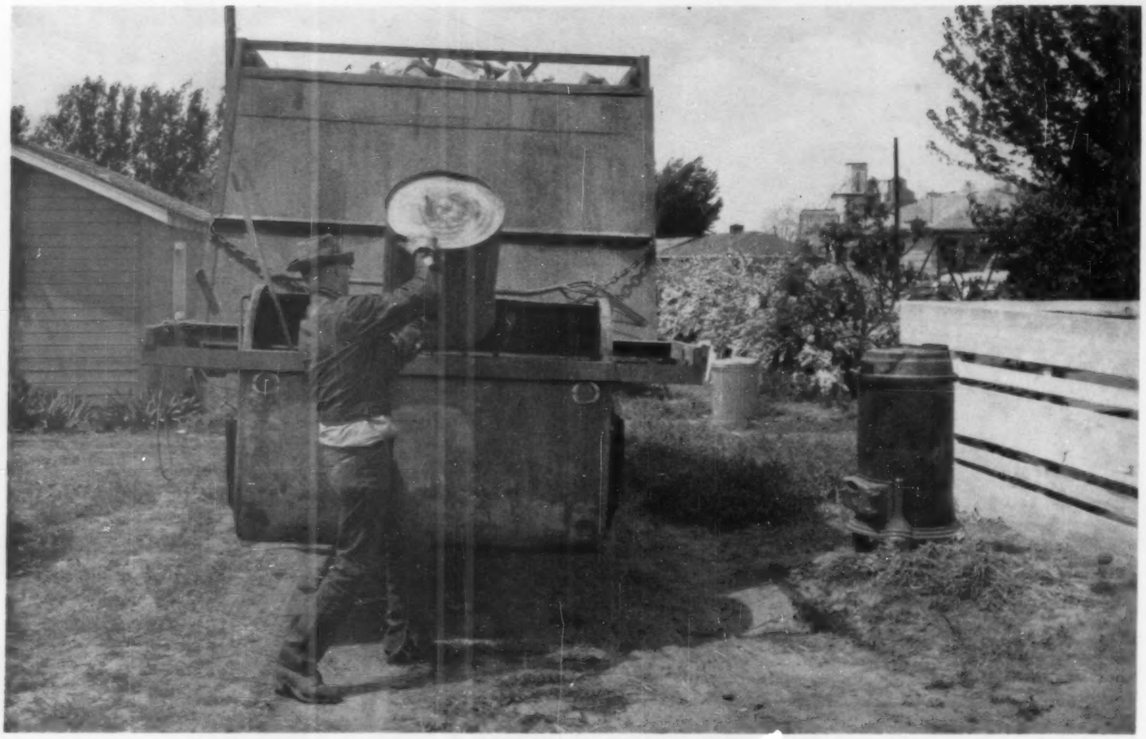
We find it more economical to produce our own patching mixture in a municipally owned L-12 White asphalt plant of 20-ton-per-hour capacity. The mixture for 1,000 pounds of patch material consists of approximately 490 pounds of limestone (½-inch size), 455 pounds of plaster and blow sand, and 55 pounds of liquid asphalt. The latter is purchased in tank-car lots. The mixture is heated to between 250°F. and 300°F. The cost comes to approximately $8.50 per ton, which is considerably cheaper than we can purchase it locally.

We have used hot patch now for about 20 years and believe it is the best material for this type of work. To prevent fast-moving traffic from damaging the patches, it is necessary to keep traffic off the finished job until the bituminous material has taken a firm set.

We find that the streets in the 40-year-old classification experience the most severe damage. In such cases the patch work is usually of a temporary nature—to help the motorist until the summer months arrive when permanent resurfacing under the city's 11-year, $16,600,000 street-improvement program can again get under way. (See THE AMERICAN CITY, February 1959, page 90.) ◄◄

O'SHEA-ROGERS MOTOR CO.
Ferguson

A 3-ton portable roller thoroughly compacts the patch material and makes it level with the surrounding surface.



One refuse hauler is to serve the four communities. Collector Earl McMillan designed and built the loading hopper and truck bed used for this purpose.

Four small Oregon communities join forces to solve their common sanitation problem through . . .

A Cooperative Refuse Program

By **DONALD R. PARKER, JOSEPH W. HUNT,** and **EUGENE E. KAUFMAN***

Four Oregon communities, Weston (pop. 750), Athena (pop. 850), Adams (pop. 208), and Helix (pop. 185) have found that the refuse collection and disposal problem can be solved economically if it is handled in a cooperative manner. In August 1956, Weston, an agricultural community located in the rich wheat farming area of eastern Oregon, was up to its ears in garbage and refuse. The nearby county dump had been closed as a health hazard and the town officials, deciding that the municipality could not support a sanitary landfill, contracted to haul the town's refuse 12 miles into the mountains for disposal at an open dump.

Two years later the other three towns found themselves in a similar position, a condition that led all four communities to the acquisition of a sanitary landfill operation. Investigation showed that by joining forces, these communities could maintain sanitary landfill operations at a cost little more than that of the open dumps of the past. The solution came about as an activity of a vector-control demonstration program conducted in Umatilla County as a cooperative project of the County Health Department, The Oregon State Board of Health, Public Health Service Region IX, and the Communicable Disease Center, under the direction of Dr. Walter P. Browne, Umatilla County Health Officer.

Our studies showed 32 dumps in the county. No community had an adequate refuse program, but the four towns were so situated, geographically, as to indicate a cooperative program for them and the surrounding rural areas.

Early in May 1958 we held a meeting with all the councilmen of the four towns and representatives of the Umatilla County Court (County Commissioners) to explain the type of program that would meet their needs. The program had three basic parts. First, the muni-

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* Mr. Parker and Mr. Kaufman are County Sanitarians with the Umatilla County Health Department; Mr. Hunt is a Vector Control Specialist, U. S. Public Health Service, CDC, Atlanta, Ga., who served as technical supervisor of the Umatilla, Ore., Vector Control Demonstration Program.

The four communities own the front-end loader, shown compacting refuse, and the contract hauler operates it for them.

Refuse is covered at the end of each day even though receipts amount to only about ten cubic yards.

cipalities should cooperate financially and administratively in a refuse control program; second, a single sanitary landfill operation, centrally located, should replace the four open dumps used by the towns; third, ordinances to improve storage and collection of refuse within the towns should be passed and enforced.

Those present agreed in general with the proposed program and appointed a committee to give the matter further study. The committee, made up of a council member from each town and a representative from the county, presented their recommendations four months later.

The formation of a corporation was ruled out for it would entail surrendering the rights and privileges of a municipal corporation to an organization incorporated only for the collection and disposal of refuse. An improvement district was also considered impractical for it would be supported on a tax-mileage basis rather than a refuse source-usage basis, an unfair arrangement to the ranchers who would pay the most for the least service.

The plan adopted and permissible under Oregon Law, was to have one town be the agency to administer the entire program while all would support it. The authorities chose the City of Athena to serve as the administrating or "key" city because it was one of the larger towns and was centrally located among the four.

Contractual Agreements

For the protection of all parties concerned, contracts were prepared to assure the "key" city the financial support required to operate the sanitary landfill and to assure the other towns that the "key" city would maintain and provide an approved disposal site available and conveniently located to them.

A Garbage Administrative Commission, consisting of one member from each of the participating towns, one member from the county court, and a county sanitarian to serve as an ex-officio member and act as secretary, assists in the administration of the program. This group serves as an official commission of the Athena City Council and advises on all matters pertaining to the refuse control program.

The towns agreed they would

Table I

ESTIMATED COST OF OPERATION OF SANITARY LANDFILL

	1958-59 Budget*	1959-60 Budget**
Purchase of equipment	$1,200.00	$1,388.53
Equipment repair	350.00	225.00
Operation	348.00	350.00
Fence	75.00	74.00
Equipment shed	200.00	200.00
Office supplies		10.00
Contingencies	217.82	150.00
	$2,390.82	$2,397.53

* Starting budget, covering only part of the fiscal year.

** Budget for the first full fiscal year.

Table II

APPORTIONMENT OF COST

	No. of premises		% of total		Pro rata cost of operation	
	1958-59	1959-60	1958-59	1959-1960	1958-59	1959-60
Adams	73	55	10.5	8.4	$250.50	$201.39
Athena	266	249	38.4	38.0	918.88	911.06
Helix	65	53	9.3	8.1	222.30	194.20
Weston	215	222	31.0	34.0	740.99	815.16
Rural residences in this area of Umatilla County	75	75	10.8	11.5	258.15	275.72
	694	654	100.0	100.0	$2,390.82	$2,397.53

need similar ordinances on refuse control. Two of them had no garbage and refuse ordinances and the other two had nothing more than contracts with refuse haulers which did not control the manner in which refuse was stored at the individual premises. To standardize these ordinances the program personnel worked together with five attorneys representing the various towns and the county; the resulting ordinances could be applied to each town. Although there were minor differences in the ordinance adopted by each town as to the method of billing and collecting fees, the basic control measures for the storage and handling of refuse were the same for all. Each ordinance made subscription to the service mandatory. Three towns added the refuse collection fee to the water bill while the fourth made no charges, paying for the service out of general tax funds.

Bids Obtained

Securing a site proved to be quite a problem. Seven possible sites were finally narrowed down to two, and the one finally selected required a special meeting with the State Highway Commission to explain what a sanitary landfill was. The 1.03-acre plot was an abandoned gravel stock pile site belonging to the State Highway Commission. In Oregon a dump cannot legally be located within a quarter mile of a highway and the State Highway Commission did not differentiate between a sanitary landfill and an open dump.

After the matter had been clarified a three-year lease was granted. Although the site will last only about three years, it will be sufficient to demonstrate this type of operation, thereby making it easier to obtain other sites when needed.

The next big item was locating a responsible collector-operator, for the efficiency of the contractor could spell the success or failure of the overall program. Three bids were received with the low bid of one dollar a month per resident for once-a-week collection of one or two 32-gallon cans. Any additional refuse would be at extra cost. The contract stipulated that the successful bidder must operate the equipment at the sanitary landfill as well as make collections.

Program Started

A large piece of equipment was not needed, for estimates placed daily refuse receipts at ten cubic yards compacted. The low bid was for a John-Deere "440" crawler-tractor with a front-end loader. This was delivered on Sept. 15, 1958, allowing the project to start at that time. Experience has shown a machine of this size to be very satisfactory for the operation.

The City Council of Athena administers the program and the city treasurer handles all of its financial transactions. Each town and the county pays its share of the cost for the landfill operation into the Athena treasury. This is a budgeted cost based on the percentage of use by each community and the surrounding rural population. The accompanying tables on this page and the preceding page show the budget for part of the fiscal year 1958-1959 and the first full fiscal year. Each city also pays one dollar for each residential water user for the refuse collection service. The refuse hauler is then paid by the "key" city for the entire operation.

Since Weston had a hauling contract for one more year, the first year's operation as far as collection was concerned was limited to the other three communities while Weston paid only for its share of the cost of the sanitary landfill. Weston would be entitled to use the site and would pay the program hauler directly for covering its refuse.

Thus by working together the four towns are accomplishing much more than they could do individually and, of great importance, a poor sanitary condition has been corrected. ◄◄

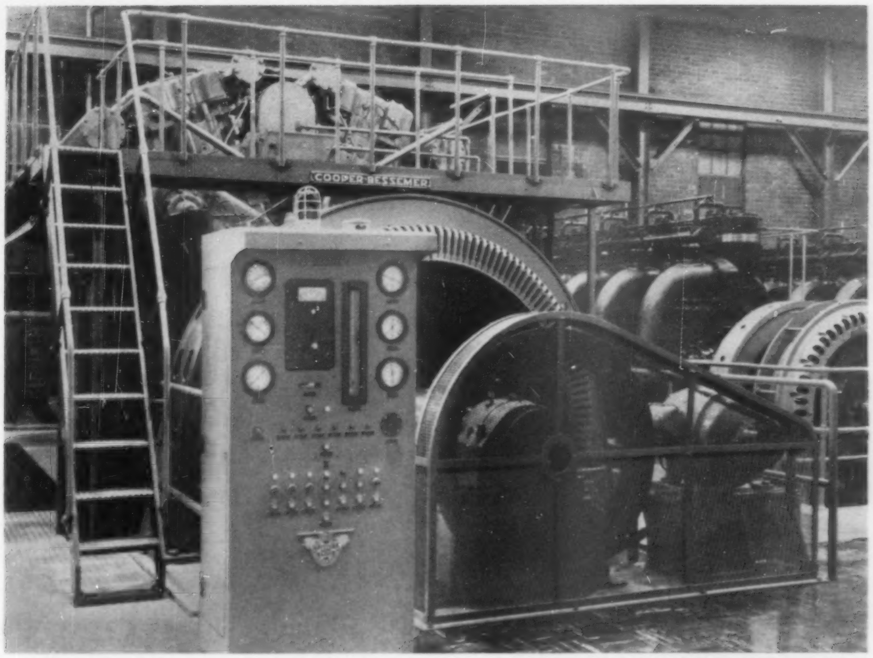
Nationwide Survey of Water Use

The Geological Survey plans to conduct an inventory of water use in the United States in 1960, according to the Department of the Interior.

Water use will be compiled in six general categories: (1) public supply; (2) self-supplied industrial; (3) steam-electric utility power plants; (4) irrigation; (5) rural domestic; and (6) water power. These data will be tabulated by source—groundwater or surface water—and by location of use, such as by states and by groups of river basins.

Information on water use collected by municipalities, states, other federal agencies, associations of manufacturers, irrigation districts and other organizations will be utilized in the study. Upon completion of the inventory, the Geological Survey will publish a report on water use in the United States, probably by the end of 1962. Preliminary data will be available prior to that time.

The last previous report on this subject, United States Geological Survey Circular 398, stated that an average 240 billion gallons a day of water was withdrawn during 1955 for the nation as a whole, or about 1,500 gallons per person. ◄◄



This big gas-diesel engine is Geneseo's countermeasure to offset inflationary power costs.

Automatic-Controlled Gas Diesel

. . . offsets rising costs of power generation in Geneseo, Ill.

By **H. G. THAYER**
Superintendent
Municipal Power Plant

Although the cost of fuel oil has more than doubled since 1944, and substantial increases have been encountered in attendant costs and supplies, the people of Geneseo pay no more for their electric power. Moreover they can take advantage of an electric heating rate of only $0.015 per kw-hr.

The municipal power plant generates electricity for a fuel cost of only 4.17 mills per kw-hr, including pilot oil or gas during summer. In the last fiscal year in which the latest high-output Cooper-Bessemer LVS engine was installed, these performance figures enabled this plant to reduce operating expenses by $21,000.

The installation of the Cooper-Bessemer, a gas-diesel engine, was part of a $475,000 program to increase generating capacity by 1,718 kilowatts. In the same program, Geneseo's distribution system was rebuilt to accommodate higher voltage of 4,160 volts. Revenue bonds totaling $460,000 were issued, to be retired out of the Electric Department revenue without any increase in rates and, consequently, without added burden to the customers.

Space Restrictions

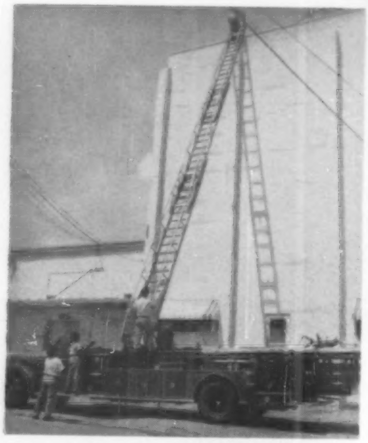
In selecting the engine, space restrictions had to be considered. The added horsepower had to be installed in the existing space of a low-output 282-kilowatt-engine generating unit. The survey of the plant, completed by the Stanley Engineering Co. of Muscatine, Iowa, recommended that a minimum of 1,750 kilowatts capacity was required. The gas-diesel twelve-cylinder unit, turbocharged to develop 2,680 horsepower at 327 rpm, was selected to fill the requirements best.

The addition of this new generating unit increased plant capacity from 3,331 to 5,251 kilowatts.

Since its installation, the new engine has actually been generating 89.9% of the plant capacity. According to a cost analysis, the performance efficiency (10,000 BTU/kwh at 61.9% load factor from peaks of 2,000 kw to lows of 750 kw) of this one engine in the year 1957-58 showed to be 8½% better than the total plant efficiency in the year 1956-57. At the same time, lube-oil consumption for the entire plant has been cut by two-thirds, considering the Cooper-Bessemer economy of 40,000 horsepower-hours-per-gallon of lube oil.

As a gas-diesel engine, the unit operates on 6% pilot fuel oil for ignition purposes, thus attaining high BTU fuel economies from the lower-cost natural gas. With the dual-fuel operation, of course, continuous operation of the engine is assured throughout the year in spite of gas restrictions. Switching from gas to oil is simple, automatic. Automatic fuel regulation on the engine increases the amount of fuel oil to 100% if straight diesel operation becomes necessary in the future. ◄◄

One of the city's latest fire stations, blending with the residential atmosphere and housing an International 750-gallon-per-minute pumper.



This Seagrave 65-foot aerial truck, with a booster tank capacity of 100 gallons, is among the finest equipment used by the department.

San Antonio's Year of Fire Improvement

By **LYNN H. ANDREWS,** City Manager

The year of 1959 may go down in the annals of local Fire Department history as the year of 'Reformation'—in which more time was devoted by more people in the revamping of departmental policy than any other year.

In the first place, it became the lot of the state's most valued fire service training man, veteran Training Chief A. L. Rathke, to assume, on February 5, 1959, the leadership, as chief, of the San Antonio Fire Department. Compulsory service retirement forced him into the sidelines on January 13, 1960, after a year of vision, foresight, and the following accomplishments:

Discipline and efficiency were stiffened.

Authority was linked with officer responsibility.

Dignity was added to the official uniform by the adoption of the United States Navy Officer style of uniform. The traditional navy stripes were added to denote positions of rank, while officers above position of District Chief added the scrambled egg design to their caps. Instead of numerous pieces of gold and silver stars on the sleeve to denote service, the Maltese Cross, which traditionally has been associated with firemen for centuries, is being used with numerals in the center to represent years of service. All agree that this change has enhanced the dignity of the uniformed fireman.

Fire prevention was taken into San Antonio homes through the adoption on September 15, 1959, of a program covering 61,000 homes a year. Hazards were removed through *fire education* rather than enforcement.

The work week of San Antonio fire fighters was shortened to 67 hours per week with the adoption of the city's 1959-60 fiscal year budget. It previously provided for a 72-hour week. This was accomplished principally through the reassignment of a number of employees from Maintenance and Fire Prevention Division activities to fire fighting activity. It was the first step towards reducing the work week still further to 60 hours; that will be necessary on August 1, 1960 when the amended version of the State Wage and Hour Law for Firemen and Policemen becomes effective.

The radio communication system was improved by a special committee comprised of department staff officers, assisted by Police Radio Communications Superintendent M. H. Rhodes.

Sixteen Airport Security Guard Cadets were trained to be security guards under direct supervision of the Director of Airports and Aviation. This arrangement will provide for the release of members of the fire department, currently assigned to the airport, for redistribution to the city's fire companies. The Fire Department continues to have jurisdiction in supervising fire

An example of a late model pumping engine employed by the department is this Mack 750-gallon-per-minute unit.

protection of the International Airport.

Maintenance of the city's central fire alarm system was transferred to the Traffic Maintenance Division. Since the system is antiquated and obsolete, it will be replaced with either a telephone alarm reporting box system or a radio alarm box system.

The fire alarm running card system was modernized to provide:

a. an up-to-date directory of all streets and intersections.

b. an alphabetical card index of all street intersections for quick reference by fire alarm operators.

c. a listing of important buildings.

d. nearest available fire hydrant to each intersection.

e. listing of fire companies required to respond on first, second, third, or greater alarms.

f. listing of current fire alarm boxes and all other intersections, each with a "signal station" number.

Indeed, the foregoing citation sounds more formidable than the other happenings in the 106 years since the Ben Milam Company, San Antonio's first volunteer fire department, was founded. However, today's problems and solutions naturally take precedence, for our population and our area in square miles are both growing phenomenally.

The Fire Department is divided into five divisions of activities: Office of the Chief (Fire Administration); Fire Prevention (Fire Marshal); Fire Apparatus and Equipment Maintenance (Master Mechanic); Fire Fighting and Home Fire Prevention (1st Assistant Fire Chief); and Fire Personnel Training (Chief of Training).

Equipment

Most of these activities, with one notable exception have been touched on in the citation. The exception is Fire Apparatus. A 1959 recommendation urged a resumption of the city's policy of replacing obsolete equipment annually. Apparatus and fire hose are needed not only by the city fire houses but by International Airport as well. Purchases that have been made by San Antonio's Fire Department in the last five years are as follows:

2 1955 Model 2-door business coupes (district fire chiefs)

3 1955 Model 750-gpm Seagrave fire pumps.

1 1956 Model 4-door "88" Oldsmobile sedan (fire chief)

1 1956 Model ½ ton pick-up truck (department shops)

5 1956 Model Mack 750-gpm fire pumpers

1 1956 Model 65-foot Seagrave service aerial ladder truck

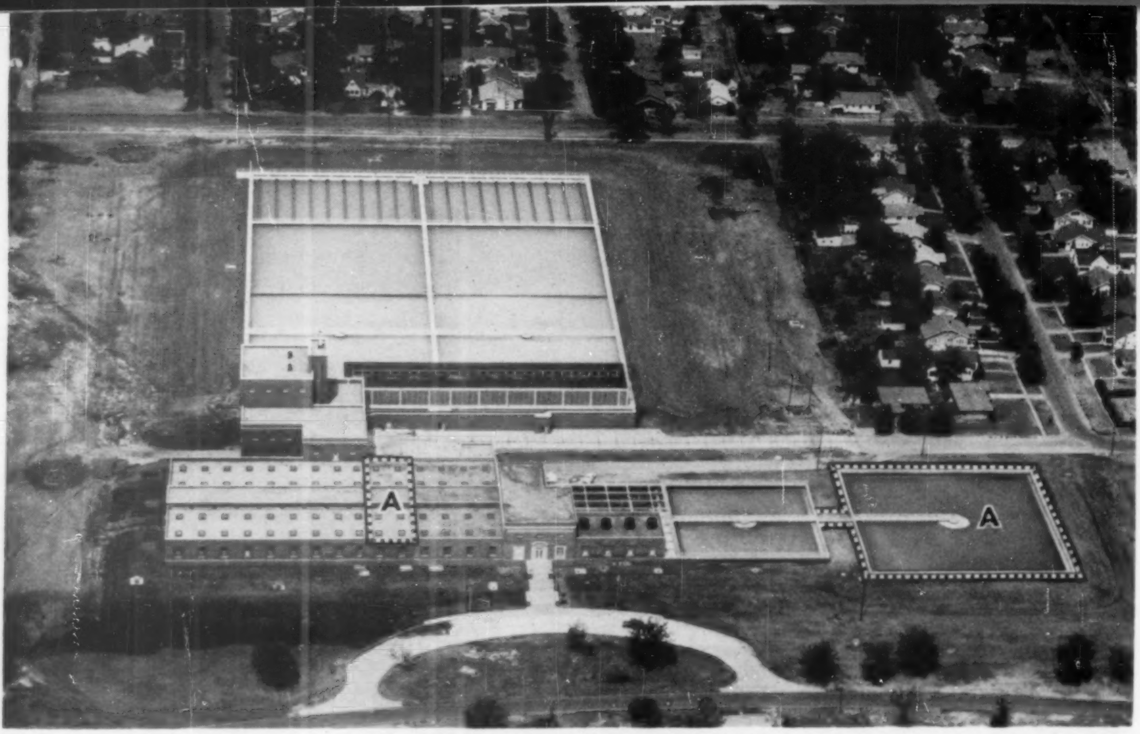
1 1956 Model 2-door business coupe (district chief)

3 1957 Model 2-door utility sedans (district and assistant chiefs)

1 1957 Model 750-gpm International fire pumper

3 1959 Model Sedans (district fire chiefs). ◄◄

Skyline of San Antonio from just west of downtown.



Wichita's water plant. The portions designated "A" were constructed in 1947-48. The portion between the two "A's" is the original plant, built in 1939-40. The balance was constructed from 1952-1958.

Wichita's Water Works in Transition

Four-stage development program covers entry of city into water-supply field to the acquisition of the complete utility

Mayor Justus H. Fugate (1959-60), flanked by City Manager Frank H. Backstrom (left) and Director of Water and Sewage Treatment Robert H. Hess, look over the latest additions to Wichita's water purification plant.

By **ROBERT H. HESS** and **MADISON F. WEST***

The City of Wichita, Kan., is a relative newcomer in the water utility field. Although development of the public water supply began in 1882, it operated solely under private ownership until 1940. In that year the city entered the picture by developing a field of 25 wells, constructing 26 miles of pipe line and erecting a purification plant. These wells, tapping the Equus Beds, replaced a group of wells in town that provided water in sufficient quantity but of relatively poor quality. The initial city investment amounted to $2,425,000.

Subsequent water supply developments have come in three stages: a 1947-1948 expansion to match somewhat the war-time growth of the community; the 1952-1959 construction to expand supply, transmission and treating capacities; and the purchase in 1957 of the private distribution system. We deemed the latter step essential to finance system growth and supply expansion.

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* Mr. Hess is Director of the Water and Sewage Treatment Department and Mr. West is Information Officer for the City of Wichita, Kansas.

Water Production and Treatment Superintendent O. K. Brandon at one of the filter controls. Present filtration capacity is 112 mgd.

The original 25 wells ranged from 85 to 265 feet deep and produced from 500 gpm to 1,000 gpm each. Wartime growth increased the demand for water and in 1947-1948 we added another ten wells and the collecting lines. Specifications were similar to those drilled earlier: 30-inch bore, 18-inch casings, gravel packing. This time we used bronze screens instead of iron and steel screens, and pump capacities ranged from 800 gpm to 1,500 gpm. In addition, the original 25 wells were reworked and seven shallow wells were drilled near the treatment plant.

The latest increase to our supply took place in 1958 when we completed another 20 wells in the Equus Beds, bringing the total in these beds to 55. These last wells include heavier casings of a new design used along with stainless steel screens. Since chlorine must be added in the field to protect pipe lines from iron bacteria, a chlorination station fitted with Wallace & Tiernan chlorinators was included. These wells as well as the others in the field were equipped with Layne pumps, the latter units rated at 1,000 gpm.

Well System

Today the Wichita water system includes 88 wells. Fifty-five are in the Equus Beds, six in a reserve field located 15 miles northwest of the city, and there are 27 local wells that have an average depth of about 50 feet.

When the first wells were drilled in the Equus Beds, the work included 22 miles of 42- and 48-inch transmission line and six miles of 20- to 36-inch extensions using American cast-iron pipe. As the well field grew, so did the need for more transmission capacity. In December 1954 the city let the first contract for a 66-inch pipeline from the treatment plant to the Equus Beds. This line, completed in 1956, consists of 25 miles of Lock Joint prestressed concrete embedded cylinder pipe. It is connected in the field with the original 48-inch line by a three-mile-long 42-inch pipeline. Both transmission lines operate under gravity flow.

To maintain the static head on water flowing through the pipelines to the city and to protect the lines from pressure surges, we also constructed a 3,000,000-gallon surge tank that floats on that line. The water stored in this tank is also available for use in the case of power failure in the well field.

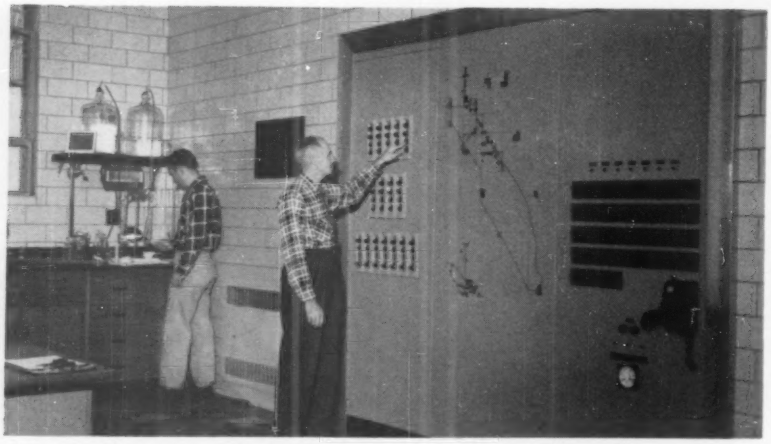
Water treatment consists of the removal of iron, manganese and hardness, and chlorination. This is done by aeration, flocculation, sedimentation and filtration. The first plant had a capacity of 32 mgd, containing sedimentation basins of 3½-million gallon capacity, four rapid sand filters of 8 mgd each, and a one-million-gallon clearwell.

In 1947-48 when the ten new wells were drilled, we expanded plant capacity to 48 mgd by the addition of a 2½-million-gallon sedimentation basin and two more filters. A second expansion program got under way in 1956 and was completed in 1958, bringing plant capacity up to 112 mgd.

First, a six-story chemical handling building was completed with Dracco pneumatic conveyors and four 300-ton chemical storage tanks, and an aeration building 237 feet long, 50 feet wide, and 22 feet high was erected over the flocculation basins. Each of the 19 tray structures contains four redwood coke trays. One feature of the building (see front cover) is its louvered aluminum sidewall panels.

Twin sedimentation basins, having capacities of 7½ million gallons each, extend outward from the rapid- and slow-mix basins. Slotted walls separate the flocculation, clarifier, and the final settling areas;

Interior of the city's main pumping station where diesel, gasoline, natural gas and electricity are utilized to pump water into the distribution system.



Operator John Hahn at the well-field control panel. Map shows the two transmission mains; lights marking well locations glow when the pumps are in operation.

this simplified construction and the walls are designed to avoid floc breakdown. Mechanical equipment consists of Dorr clarifiers and Link Belt propeller-type rapid mixers.

Weir troughs increase the gathering area, and the clarified water returns to the rapid sand filters by gravity flow. Layne 2,000-gpm low-lift pumps installed at the outer ends of the basins permit draining. One basin is drained in the spring and the other in the fall for annual maintenance.

We also added eight filters, each having a capacity of 8 mgd at a rate of four gallons per square foot per minute. We expect this capacity to be reduced by about 25% when used for surface water treatment. Surface backwash equipment was added to all filters and an additional million-gallon clearwell was constructed. Finally, we constructed an 84-inch low-pressure effluent line between the plant and the privately owned distribution firm's pumping station to supplement two 42-inch lines.

Late in 1954 the mayor appointed a community water advisory committee to work with the city staff and consulting engineers in the study of water resources, needs and outlooks. A subcommittee composed of commercial and investment bankers studied financing problems. This latter group concluded that the split city-private ownership was a handicap to completing and financing the necessary water developments and felt it would be most advantageous for the city to take over the utility.

Committee recommendations and study by the Wichita Board of City Commissioners resulted in a bond election in 1956 at which time the voters approved the purchase of the distribution system from the private owners. The price was $31,350,866—replacement cost new less depreciation, and included a $1,400,000 "going concern" allowance.

The city assumed operation on October 30, 1957. Gross revenues for 1958 and 1959 were $4,166,949 and $4,257,182, leaving $3,161,014 and $3,222,575 respectively for debt service, providing debt coverage of 167% and 171%. Our consultants completed a water rate study early in 1959 and concluded that no general increase was required then.

Water is pumped through 785 miles of distribution mains at 95 psi pressure. Diesel fuel, gasoline, natural gas and electricity provide the alternate power sources at the pumping station. Capacity at this point is 110 mgd, which almost matches the 112-mgd capacity of our treatment facilities. At the beginning of 1960 the department listed 68,700 active water service accounts. The 1958 daily average amounted to 25 mg and our peak day to date was 61 mg.

Personnel total 154, of which 70% are former employees of the private water company. General Electric supervisory equipment for well pump control permits operation of the vast well network with relatively few operating personnel.

Current Developments

Wichita has two major water supply developments underway at present:

1. We are strengthening the distribution system by the addition of transmission mains and adding elevated storage. The system now contains four storage tanks, three with a capacity of 2,000,000 gallons each and one with a capacity of 300,000 gallons.

2. The Wichita Board of City Commissioners, through the Kansas Congressional delegation, is seeking approval for a multi-purpose water reservoir. To be built jointly by the city and the federal government on the North Fork of the Minnescah River, 25 miles west of the city, this reservoir would give a firm yield of 38 mgd and an average yield of 50 to 60 mgd.

The reservoir would also offer flood protection to downstream areas, contribute to a small irrigation area, establish a preserve for small upland game, and provide much needed fishing and water recreation area here on the edge of the high (and often dry) plains.

In the 1956 referendum Wichita voters authorized the city to share the cost with the federal government up to $9,377,000, and further approved construction of a raw-water pump station and transmission line in an amount not to exceed $7,650,000.

In this connection, Mayor Justus H. Fugate (1959-60), Mayor Levi B. Rymph (1960-61), and members of the City Commission, with the assistance of former mayor A. E. Howse as special representative, and city administrators and technicians under direction of City Manager Frank H. Backstrom have taken a vigorous part in presentation of the project proposals for Congressional committees.

Recharging the Beds

Recharge of the Equus Beds ultimately will control the quantity of water available there. Hence, one of the city's continuing water resources studies concerns itself with feasibility of artificially recharging these beds. The staff hydrologist is operating small-scale pilot experiments. One of these employs a low retention dam across a small creek, which normally is dry, to divert rainfall runoff into the beds. Other possibilities also are under investigation.

It has only been 20 years since we started in the water business, but they have been very busy years, with much already accomplished and a good deal more planned for the future, to insure Wichita's growth with an ample water supply. ◄◄

Flexible Remington Rand filing system makes it possible to bring trays of license records to the Safe-File Desk.

Better License Enforcement With Central Records

By **E. D. LINDSAY**
City Administrator
Montebello, Calif.

Reorganized license records are expected to increase our revenue at least 20%. Each record which the city must keep in connection with the businesses it licenses was formerly housed in a separate file, and it was necessary to look in up to six different places to get all the information on a business licensed by our city. A new filing method consolidates all record keeping and accounting for each business into a single, compact folder. Instead of being spread all over our offices at City Hall, all license records are now within fingertip reach in a single, modern work center.

The records reorganization was carried out with the aid of systems specialists from the Business Services Department of Remington Rand. The new work center makes use of the new Kard-Up files and it also provides point-of-use fire protection for these important city records. The Kard-Up records are housed in a Safe-File Desk, which is virtually pryproof and tamperproof.

The Kard-Up System is built around a visible-tipped, vertically-filed folder which holds an 8-by-5-inch ledger card for easy posting. Visible signals in the edges of the folders mark individual records for attention or followup.

A single folder houses all working documents pertinent to each licensee. These include:

1. ***License record.* This is a ledger card on which we enter information on payment of fees, penalties. Spaces are provided for entry of dates on which bills are rendered and follow-up letters mailed.**
2. ***License Application.* As filed by each business.**
3. ***Business License.* As issued.**
4. ***Application for Opening Permit.* Where applicable.**
5. ***State Sales Tax Permit Number.* At times it is important to have this available.**
6. ***Recap of previous business records.* These round out the picture.**

The folders containing these documents are housed in trays which are easily removable from the Safe-File. When the workload in our licensing department is heavy—as when annual bills are due—full trays of records can be placed on the desk of License Officer Bernice K. Westlake for volume handling. After bills are issued, colored Graph-A-Matic signals are moved to the far right of the pocket making this record stand out clearly until the bill is paid and the signal recessed.

When there is a petition, investigation or other pending matter connected with a licensee, the signal is moved to a halfway position, also highlighting this condition for immediate attention. So, in monitoring the financial status of our license accounts, all we have to do is spend a few minutes glancing along the visible edges of the Kard-Up pockets.

A cross reference indexes all licensees according to street address. This record, set up on Index Visible (IVI) panels, has become our major tool in license fee enforcement. Today, it is a simple matter to detach an Index Visible panel from its stand, place it in a special carrying case and take it on a tour of the city.

The ability of this system to improve enforcements has led directly to the 20% improvement in revenues—which paid for the cost of reorganizing our records several times over during the first year of its application. ◄◄

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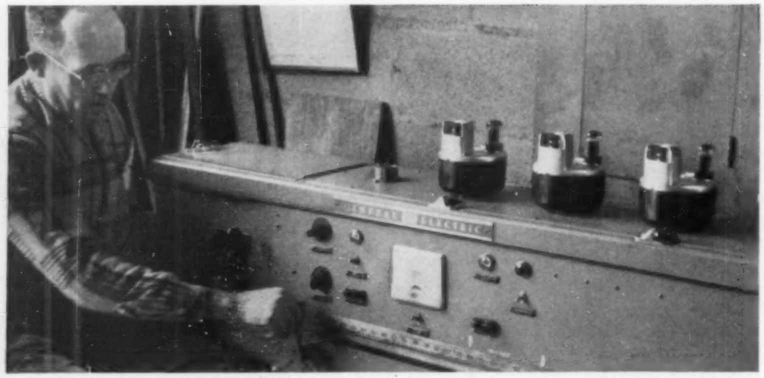
Faulty photoelectric controls are not repaired on the spot . . .



. . . but are replaced and returned to the shop where they are recalibrated.

More Cars and Light—Fewer Deaths

By **BEN WEST**, Mayor, City of Nashville, Tenn., and
E. E. PARKS, Manager, Lighting & Heating Dept.
Nashville Electric Service

A visitor approaching Nashville, Tenn., at night for the first time can easily understand why it is called, "America's Best Lighted City." The brightness didn't just happen. The program took more than five years to complete and cost nearly $2.4 million.

As the city's population increased—the post-war automobiles began clogging traffic—it became apparent to the mayor, the city council and Nashville Electric Service officials that better street lighting was needed to help night-time traffic.

After-dark crime was getting to be a problem too and a poorly lighted downtown meant less night-time shopping for merchants already feeling the competition of suburban shopping centers.

Nashville Electric Service was authorized to plan, build and maintain the most modern lighting system, and do it in five years. Expenditures for the lighting were not to exceed $600,000 per year. The annual rate charged off to the city was at cost—or about 8% of the utility's investment—plus eight mills per kwh for energy. Per capita cost is $2.85 per year. The contract is good for 50 years.

In 1952, the last full year before the relighting was begun, 40% of all traffic accidents were at night. In 1958, when the program was completed, only 29% of accidents were at night. In 1952, 21 persons lost their lives in night-time traffic mishaps; in 1958 only 12 persons were killed in after-dark traffic accidents despite an increase from just under 100,000 to almost 150,000 in vehicles registered in Davidson County. Armed robbery and other crimes of violence at night have been reduced materially according to a special report made by the police department's central records section.

Our bright downtown attracts customers in droves. Merchants reported one of the best night-time pre-Christmas seasons in history in 1959. This helps create a better business climate for the city, according to Carmack Cochran, president of the Nashville Chamber of Commerce.

Neighborhood business centers have benefited, Mr. Cochran said, with good lighting encouraging people to move around at night without fear.

Nashville's nearly 425 miles of streets are lighted by 11,279 mercury-vapor and incandescent luminaires. That is 265 lamps per mile on the average, spaced 200 feet apart, over the entire city.

Before Modernization

In December 1953, there were 6,300 scattered, outdated incandescent luminaires within city limits—small and too far apart. It was an opportunity to start almost from scratch and light an entire city properly.

The city sold its old system to the Nashville Electric Service in order that the utility might assume its operation during the time it was being replaced.

Thus the old lighting was removed as the new was installed. The elements which combine to make up good street lighting, as seen by Nashville Electric Service and city officials are:

1. Adequate quantity and quality

illumination on every city street.

2. **Maximum lumens (light output) on the street per kwh used.**
3. **Lowest first cost**
4. **Ease of maintenance.**

Statue of Edward Ward Carmack, U. S. Senator, Tennessee, 1901-07, looks down from the steps of the State Capital on busy well lighted streets in downtown Nashville.

Most streets are narrow, making traffic hazardous, so it was deemed advisable to use higher values and well over 50% of Nashville's streets are lighted to a level in excess of the minimum levels as shown in the "American Standard Practice for Street and Highway Lighting."

All 20,000-lumen fixtures were mounted 30 feet above the street; 10,000-lumen lamps 27½ feet and 6,000-lumen luminaires 25 feet.

It was found that the efficiency of the installations depended on the efficiency of the light source and luminaire used.

It was found that the mercury lamps in the luminaires Nashville was using would last more than 10,000 hours. However, group relamping takes place after about two years and three months or 9,000 hours. There are about 5% burnouts. The savings on the additional lamp life would not be worth the high labor costs of making spot replacements for individual burnouts.

Both the downtown area and major traffic streets received immediate attention in the program. The downtown section, about 9.4 miles of streets, was originally lighted spottily by 3,000 and 10,000 lumen units.

Today, 595 modern mercury vapor luminaires provide 1.6 footcandles in the business district. The Illuminating Engineering Society's recommended standard is 1.2 footcandles for business districts.

The G. E. units are mounted on Union Metal steel poles at a height of 30 feet. In the heart of the downtown area they are only 75 feet apart staggered, although this distance increases to 120 feet in the outer parts of this district.

Traffic streets were given attention in order of volume of travel. Now all traffic streets are lighted to meet or exceed the I. E. S. standards. Both 400-watt mercury vapor and incandescent luminaires are in use on these streets and footcandles are rated at 1.2.

After all the traffic streets having a count of 1,000 vehicles per day or more were lighted, residential streets came in for perhaps the biggest single improvement. There, scattered 3,440 filaments units provided an average of less than 2,500 lumens each. All these have been replaced by 6,300 modern, 6,000-lumen incandescent units, making residential areas in Nashville among the nation's most cheerful and bright.

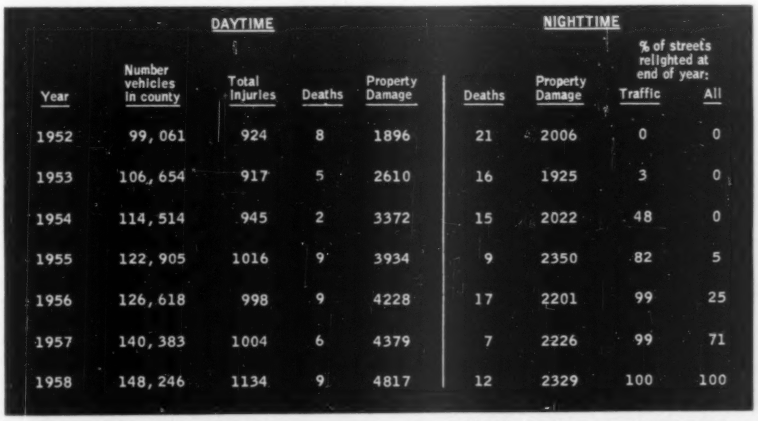
The units are spaced 250 to 300 feet apart and provide an average of 0.3 footcandles of illumination —about 50% above recommended minimums for residential neighborhoods.

In addition to street lighting, Nashville Electric Service has lighted the municipal parking lot, the city hospital parking area, all viaducts and bridges and placed 750 units in alleys. There are 34 lights on streets in the city cemetery—undoubtedly one of the best lighted cemeteries anywhere.

A perpetual inventory is kept on all types of luminaires, including spare parts, glassware and controls, in addition to replacement lamps. As a stock becomes low in any category, supplies are requisitioned to replenish it.

Photoelectric controls have given Nashville Electric Service an inexpensive way of automatic dusk-to-dawn control of the individual incandescent luminaires along residential streets. The mercury units are served from a 240-volt circuit, phase-to-ground, fed in two directions from one 10-kva transformer. The lights are turned on and off by a photoelectric control operating a multiple switch.

We have reason to believe that an overwhelming number of citizens are quite proud of their street lighting. This encourages us to continue a program that gives some substance to our title, "America's Best Lighted City." ◄◄



	DAYTIME				NIGHTTIME		% of streets relighted at end of year:	
Year	Number vehicles in county	Total Injuries	Deaths	Property Damage	Deaths	Property Damage	Traffic	All
1952	99, 061	924	8	1896	21	2006	0	0
1953	106, 654	917	5	2610	16	1925	3	0
1954	114, 514	945	2	3372	15	2022	48	0
1955	122, 905	1016	9	3934	9	2350	82	5
1956	126, 618	998	9	4228	17	2201	99	25
1957	140, 383	1004	6	4379	7	2226	99	71
1958	148, 246	1134	9	4817	12	2329	100	100

Daytime and nighttime accident records on Nashville's streets 1952-1958.

Superintendent Van Meter holds one of the ATI units and a sample test probe. In front of him is a disassembled unit showing the cast-iron body, bronze plug, neoprene diaphragm and key used to remove plug.

CITY GAS DEP'T

H. L. Farmer, assistant superintendent of the gas department, demonstrates the ease with which tests can be made from a vehicle. The long probe can readily be inserted in the ATI unit.

Safety First in Gas Distribution

Permanent test facilities and annual gas leakage survey insure safety and assist maintenance program in Henderson, Ky.

By **OLIVER VAN METER***
Superintendent

Underground leaks are a headache to all utilities. In the case of sewers it means added treatment costs because of infiltration or a possible localized health hazard. Water leaks can cause property damage, sometimes quite extensive, but seldom do they pose a threat to personal safety. Gas, however, is another matter. Even a minute leak in the right place can cause an explosion resulting in extensive loss of life and property. Thus safety in gas distribution is of paramount importance. This is our chief reason for making an annual leakage-control survey.

A second reason is to assist in the efficient operation of our repair and maintenance program. Such a program cannot be carried out without a complete knowledge of conditions throughout the system.

Henderson purchased its gas system from a private owner in 1867 for approximately $2,700. At that time manufactured gas was used only for street lighting. The first major expansion took place about 1900, and in 1929 the system was converted to natural gas. As the system grew so did the leaks and by 1936 records showed that 60% of the gas put into the system was lost through leaks. The old cast-iron pipe lines with jute and lead joints were badly in need of replacement and in 1938 and 1939 the utility superintendent persuaded the city authorities to undertake such a program. The new system consisted of steel pipes, coated and wrapped at the mill, and all welded joints.

About 1950 we noted leaks again developing and immediately discussed the matter with various firms to see what measures could be taken to maintain the system properly. This resulted in our first comprehensive leak survey made by Heath Survey Consultants, Inc., of Wellesley Hills, Mass.

In 1953 we started using the services of this firm on a continuous basis, making one survey annually, and extended this to a winter and summer survey in 1957.

Winter Survey

The winter survey covers the commercial and business area plus all public buildings such as schools, hospitals and churches. Actual inspection includes the street and sidewalk and the building interior.

The street and walk portion of

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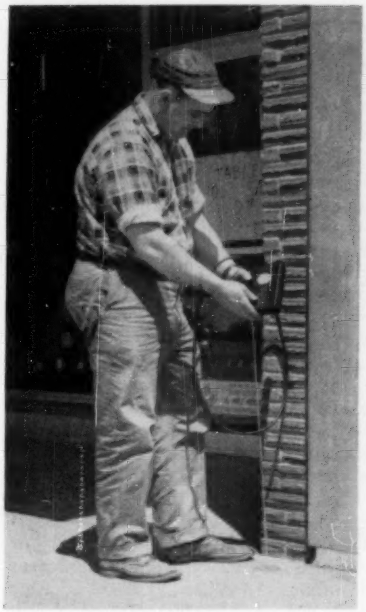
* Mr. Van Meter is a 19-year veteran with the City of Henderson, serving as Superintendent of the Gas Department since 1951 when the gas and electric utilities were separated into individual departments.



Here a unit has been installed above the service line adjacent to the building wall. Test equipment consists of a probe connected to a combustible-gas indicator.

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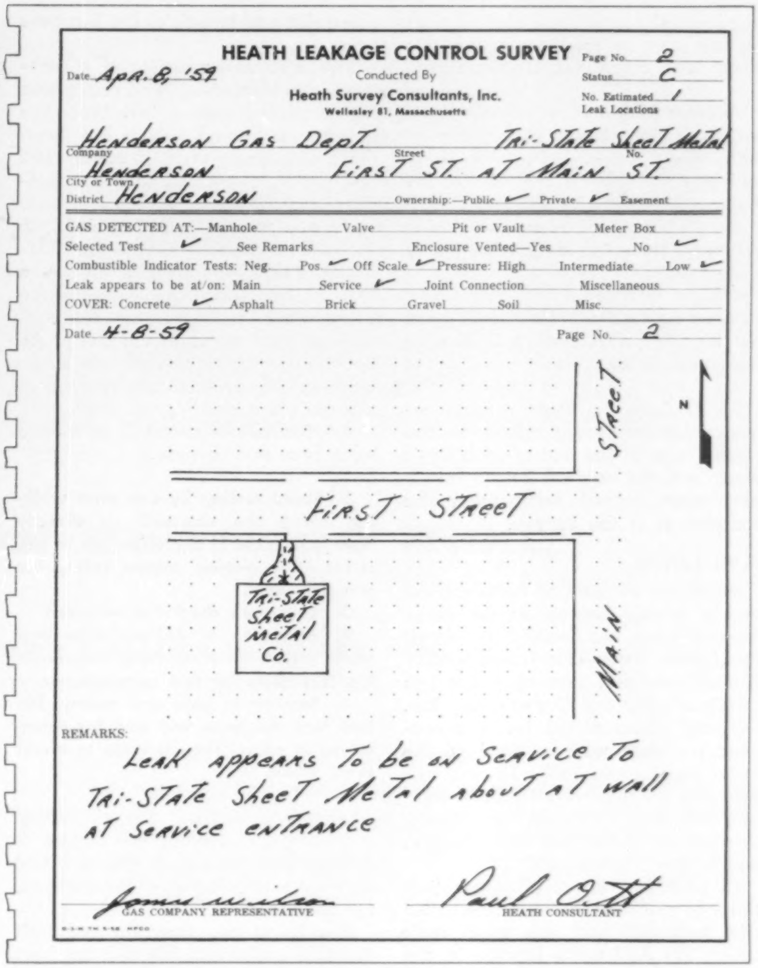
Reports such as this are made for each building in the winter survey, whether the test is positive or negative. This sheet taken from the 1959 survey indicates a Class C leak, requiring immediate attention.



HEATH LEAKAGE CONTROL SURVEY
Conducted By
Heath Survey Consultants, Inc.
Wellesley 81, Massachusetts

Date Apr. 8, '59
Page No. 2
Status C
No. Estimated Leak Locations 1

Company Henderson Gas Dept.
Street Tri-State Sheet Metal
No.
City or Town Henderson — First St. at Main St.
District Henderson
Ownership:—Public ✓ Private ✓ Easement

GAS DETECTED AT:—Manhole ___ Valve ___ Pit or Vault ___ Meter Box ___
Selected Test ✓ See Remarks ___ Enclosure Vented—Yes ___ No ✓
Combustible Indicator Tests: Neg. ___ Pos. ✓ Off Scale ✓ Pressure: High ___ Intermediate ___ Low ✓
Leak appears to be at/on: Main ___ Service ✓ Joint Connection ___ Miscellaneous ___
COVER: Concrete ✓ Asphalt ___ Brick ___ Gravel ___ Soil ___ Misc. ___

Date 4-8-59
Page No. 2

REMARKS:
Leak appears to be on Service to Tri-State Sheet Metal about at wall at Service entrance

James Wilson
GAS COMPANY REPRESENTATIVE

Paul Ott
HEATH CONSULTANT

the work consists of drilling test holes (normally using a one-inch drill) throughout the commercial area, the actual number of holes depending upon the number of services in each block, distance between gas main and the buildings, and the number and location of other test openings such as manholes and valve boxes. A careful study is made to drill the minimum number of holes consistent with complete coverage of each block.

The survey crew consists of one or more experienced men from Heath plus at least one man from our own department. Using a combustible-gas indicator, they check all the holes, valve and manhole openings and also above each service on the inside and outside of the building where it goes through the wall.

Inside the building they use the soap test from the entrance to the building through the meter. If gas is detected inside the building but no leak found up to and through the meter, the line is followed in the building until the leak is found.

A report is made on each building whether the test is positive or negative. When leaks are noted, they are actually pin-pointed to expedite repairs.

One critical point in the winter survey is testing over the service just outside the building wall.

Summer Survey

This is a vegetation survey covering the residential areas only. The survey team drives and/or walks slowly over the mains searching for any abnormal state of vegetation. They also cover all house services. When such abnormal conditions are found, a determination is made to see whether gas is the cause. Holes made by forcing a steel bar into the ground are checked with the combustible-gas indicator, and if gas is found to be present, the men "center" the leak by making a series of holes and check for those with the greatest gas concentration.

The outside vegetation survey includes written and diagrammatic reports on positive cases only (those in which leaks are found). However, both positive and negative reports are made in special cases such as customer complaints, previous leaks, and vegetation damage similar to that caused by gas. The summer survey checks all green houses with positive and negative reports.

Since considerable training and experience is necessary to develop the ability to detect abnormal conditions, to determine if gas is a factor and then to center the leaks, our consultants do this work rather than our own employees. For this work, Heath employees are graduate foresters or have an equivalent background.

All leaks are classified according

to potential hazard and size so that repairs may be made on a priority basis. The three classifications are:

A-leaks: **Those of a minor nature; not hazardous. However, a group of these leaks would indicate a trend and give the general condition of the main.**

B-leaks: **Not hazardous but losing sufficient amounts of gas to justify early repairs.**

C-leaks: **Hazardous, requiring repair as soon as possible. Such leaks need not be large, for location is also an important factor.**

In all cases duplicate reports are made with the copy going to the repair crew at the end of each day's work and the original bound into a permanent record form upon the completion of the survey.

ATI Units

Since we planned to continue the yearly winter survey in the commercial area we decided to install the Heath Auto-Test-Insert (ATI) Units developed several years ago by Heath Survey Consultants, Inc. Original plans called for a three-year program with a third of the units installed in 1958. During this program we discovered a very serious leak in a two-inch line passing through an abandoned coal chute in one of the city's banks.

In 1959, instead of doing another third of the work, Heath completed the program and we now have about 300 ATI units located in the sidewalks and streets of the business area.

The ATI unit consists of a cast-iron, naval-bronze, and neoprene fitting placed into a test hole, the bottom portion of which has been filled with finely crushed stone. The test probe, connected to a combustible gas indicator, is inserted into the top of the bronze plug and into the slit neoprene diaphragm. Depressing the diaphragm allows a test of the subsurface atmosphere to be drawn through the combustible gas indicator. When the probe is withdrawn, the diaphragm snaps back to its original position, thus resealing the unit.

Advantages of the ATI units are numerous and include:

1. **Rapid testing by one man walking along the sidewalk or directly from a vehicle if the units are in the street. This means added safety for test personnel.**
2. **Easy spot checks as required.**
3. **Reduction of drilling noise and traffic interference resulting from drilling test holes for test purposes.**
4. **Savings in time and money. We feel that the units will pay for themselves in actual time savings in about three years.**

Now our annual winter survey can be made without the bother of drilling holes except in special cases, and we can make spot checks on a moment's notice.

Results of our program are both tangible and intangible and can best be described in connection with a brief description of the Henderson gas system.

We purchase natural gas from the Texas Gas Transmission Company. To serve the 20,000 people living within the city and another 5,000 on the outskirts, we utilize both high and low pressure mains. The system comprises about 50 miles of high pressure mains (25 psi to 90 psi) and some 135 miles of low pressure mains (6 to 8 ounces per square inch). In many cases mains run down both sides of the wide streets. Our 6,400 customers use on the average about 145,000,000 cubic feet a month. However, since 94% of our customers use gas for heating, winter time use is much greater than that in summer.

In 1954 our records show a loss of 28,000,000 cubic feet out of 931,000,000 cubic feet purchased or about 3%. In 1958 we cut our losses to about 1.7% or 21,000,000 cubic feet out of 1,252,000,000 cubic feet purchased. However, during this period the system mileage increased by approximately 20%, thus the actual gains from the yearly surveys is greater than that shown by the percentage figures.

Safety

Then there is that all important item of safety. No system can be considered 100% safe, but we know ours is about as safe as is humanly possible, and our annual leakage control surveys play an important role in making it that way. ◄◄

Single-Family Homes for Slum Dwellers

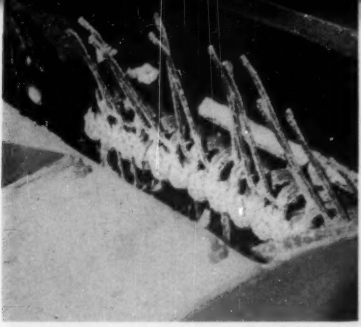
With hundreds of homes and apartments lying in the paths of proposed expressways, slum clearance and urban renewal projects, many Atlanta, Ga., residents will soon be forced to move. Fortunately, relocatees will have their choice of some 5,500 new homes that are being built over a period of nine years.

More than 685 of these houses have been completed, mostly in subdivisions, and more than 1,072 are now in various stages of completion. The primary purpose is to house displaced families.

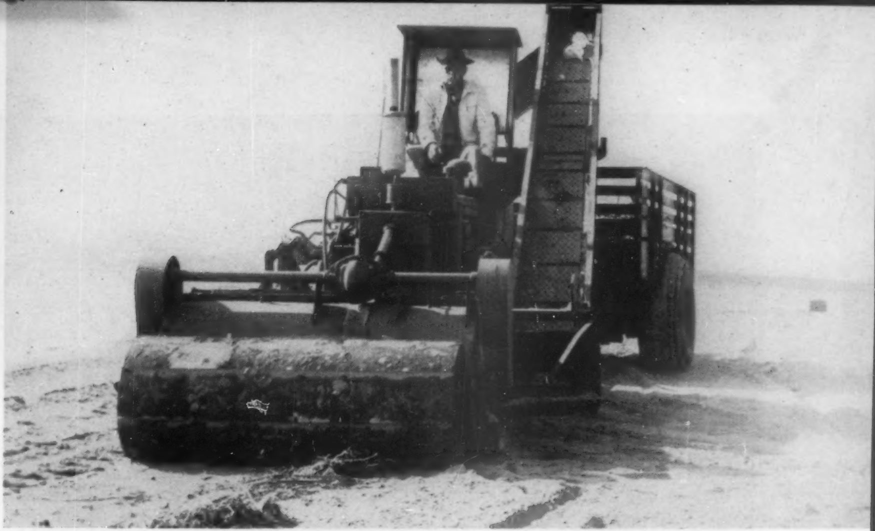
An important part of the city's urban renewal program, the homes, which average approximately 950 square feet in area, are being built under Title 221 of the Federal Housing Act. They are developed in subdivisions of 50 to 100 units, with the developer financing the entire development. The homes sell for between $9,000 and $10,000 under F. H. A. at 6½% from 20 to 30 years.

To qualify, purchasers must be persons displaced by expressway or urban-renewal activities and have an income of at least $250 per month. The Urban Renewal office of Atlanta certifies the individuals who have preference for these homes, and the developer must hold the houses for 90 days before releasing them to the general public for sale. ◄◄

Neat, compact homes on ample plots for displaced families.



A rotating reel of spring-tined rakes picks up the seaweed and tosses it into the conveyor.



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Fort Lauderdale's mechanical seaweed rake mechanizes a costly hand operation.

A Mechanical Seaweed Rake

. . . keeps Fort Lauderdale's beaches clean and neat with one third of the former labor requirements

By **R. H. BUBIER**
Administrative Assistant
Office of the City Manager

Fort Lauderdale's famous beach is now kept manicured in approximately one third the time formerly required, thanks to the use of an ingenious machine developed by the city to collect seaweed.

In the past, workmen from the Park Department laboriously raked and collected the seaweed. Now, with the operation nearly completely mechanized, a heavy seaweed deposit that would have taken 2½ days to clear can be removed in six hours.

The key to the operation is the use of a mechanical rake assembly mounted on the front of a bulldozer. This assembly scoops up the seaweed and channels it to a perforated belt conveyor attached to the left side of the bulldozer. The conveyor is inclined vertically toward the rear and carries the seaweed back to be dumped in a trailer towed by the bulldozer.

Use of the perforated conveyor belt overcomes a major problem which had been experienced by the city during previous attempts to mechanize the operation. The Park Department had tested a variety of machines, including a hay baler, but none could pick up the damp seaweed and remove effectively the large amounts of sand clinging to these deposits. With this machine, as the seaweed is moved along the conveyor belt, the gentle agitation of the belt removes practically all sand.

The complete seaweed removal follows this procedure:

- **Beach cleaning personnel stack the seaweed in windrows, using a side-delivery rake machine,**
- **The collection machine then follows, scooping up the seaweed which is transported by the conveyor belt back to the trailer, and**
- **A laborer stationed in the trailer distributes the seaweed as it is unloaded.**

The trailer itself was designed locally and provides a hydraulic-lift base. This permits unloading the seaweed to trucks in about two minutes.

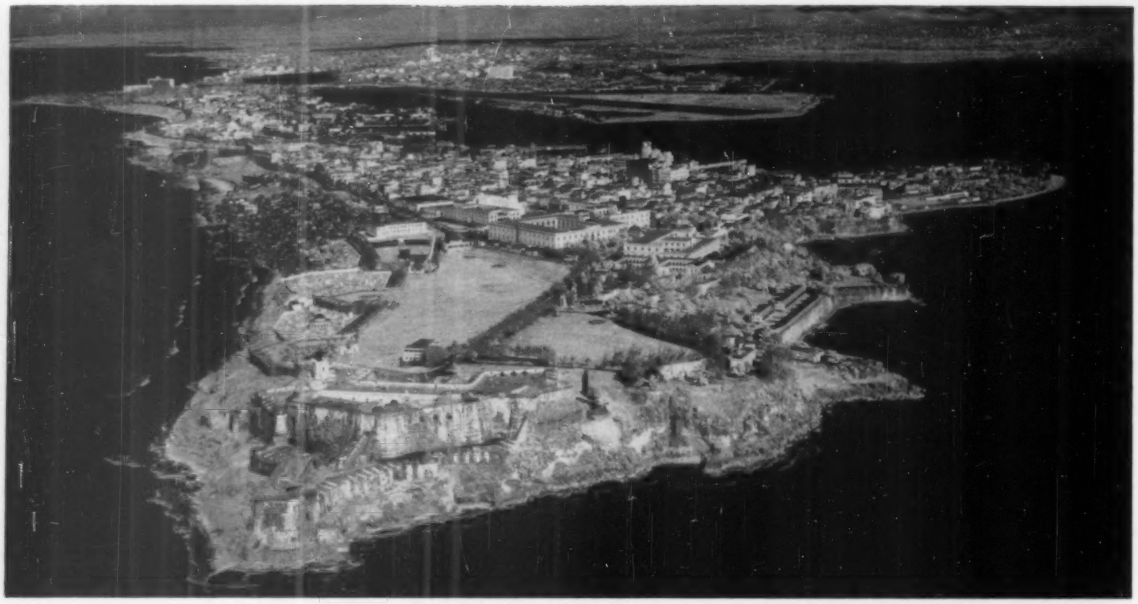
Cost

Clifford W. (Dusty) Cheston, veteran superintendent of the city garages, developed the seaweed collection machine. He was authorized by the City Commission to undertake the project and, after many hours of research, produced a finished product that cost $7,795. This cost, however, was amortized in the first year of operation since the city was able to eliminate two full-time laborer positions from the beach maintenance crew.

The seaweed collection assembly is roughly five feet wide. It consists of six lengths of one-inch pipe which are attached to a 12-inch-diameter metal disc at each end, with the pipe being spaced evenly around the circumference. Each pipe has about 30 spring steel teeth, eight to ten inches in length, placed through holes drilled in the pipe and bolted in place. The teeth are staggered on alternate pipes to insure an even pickup of seaweed. As the tractor moves the machine forward, the spring-tined rake rotates, throwing the seaweed out to a transverse belt conveyor. This, in turn, carries it to the inclined conveyor belt on the left side of the tractor. A TD International tractor provides the motive power.

The cylindrical spring-tined collection unit is chain-driven from a hydraulic pump located on the crank-shaft end of the tractor motor. The rake rotates at from 250 to 300 revolutions per minute. The entire unit rests on sleds which ride along the surface of the sand when the machine is in operation.

A roller on the front of the assembly provides suspension. We have found that the machine tends to work into the sand when suspended by sleds on the sides. ◄◄



Old San Juan takes up about half of the peninsula; note the fortress of El Morro in the foreground.

San Juan's Choice, Wrecking or Restoration

Matching the urban renewal program is the fight to save the 400-year-old walled city

By **JUAN J. SANDIN**
Director of Public Works
San Juan, P.R.

It began with a neighborhood complaint over destruction of an ancient interior patio a few years ago. But what started as a murmur of protest at such "vandalism" and swelled to a wave of outrage has exploded into a full-scale restoration project aimed at saving San Juan Antiguo (the "Old City").

Old San Juan is nestled behind thick walls that were built between three and four centuries ago by Spanish settlers led by Ponce de Leon. The crazy-quilt pattern of narrow streets and ancient buildings is the joy of tourists, the pride of San Juaneros—and the scourge of motorists and modern city builders alike.

Space in the Old City is at a premium, but there is ample room for the city to expand outside.

Almost within earshot of—and in direct contrast to—the fast-moving demolition and reconstruction operation in the city proper, restoration in the Old City gains its ground more slowly. Though less spectacular than the rehabilitation program, the importance of restoration is demonstrated by the number of private and public interests that have taken a hand in its implementation.

Society Formed

A Society for the Development and Conservation of San Juan was formed and its first official act was to push a bill through the commonwealth legislature, providing a 10-year tax exemption for Spanish colonial buildings that are properly and substantially restored. To add weight to the movement, "Fomento," the famed Economic Development Administration of Puerto Rico which promoted the entire "Operation Bootstrap" movement to improve the island's economy, decided to promote tourism and bought four restorable buildings in the Old City.

Simultaneously, the government established the Institute of Puerto Rican Culture, one of whose functions is to work out the details of restoring the city. Architect Mario J. Buschiazzo from Argentina, in consultation with the Puerto Rico Planning Board, suggested that an historical commission be established. Nathaniel S. Keith and Carl Feiss, Washington consultants for urban renewal, came to work with the San Juan Municipal Housing Authority in planning a program for the Old City.

The heart of the restoration program is Cristo Street, now a showcase of the Department of Tourism and the municipal government. An interior decorator, an antique dealer, a pair of furniture manufacturers and a textile manufacturer started the ball rolling years back by opening Dolphin Court on the street. The restored building offers the charm of hand-turned wooden grillwork over the front, fine old wood shutters, a pleasant interior patio and high, beamed ceilings.

The four old houses bought by the Puerto Rico Industrial Development Company, financial arm of Fomento, are also located in Cristo Street. All four are now either in active use or are in the process of being restored. One is now a fancy dress shop and another is the Casa del Libro. The latter, a combined effort of Fomento and the Department of Education, houses a $250,000 book collection under the direction of Dr. Elmer Adler, a noted bibliophile who is a former member of the staff of Princeton University.

The restoration of this building was undertaken under the guidance of the Institute of Culture only after intensive research into the architecture of its period and the removal of inharmonious touches that had been added through the centuries. The result is a restored, authentic structure of the 1749-1784 period that carries all the charm and dignity of its day, yet serves an everyday purpose. Casa del Libro is not a museum but a working establishment.

Much restoration is taking place in Cristo Street, shown here. Old San Juan city planners reportedly built narrow streets so that the shade would keep them cool. Note the old-style Spanish balconies.

Fortaleza Street has this attractive, completely restored building.

Contrast

Restored areas and buildings are in sharp and pleasant contrast to other areas of the Old City that have given way to plate glass, chrome and neon signs. San Juan is taking its place beside New Orleans' Vieux Carre, Boston's Beacon Hill and others in proving that progress and historic beauty can be compatible.

The regulation of construction in the Historic Zone has been taken from the Puerto Rico Planning Board and given to the Institute of Culture. An honorary Historical Advisory Committee of architects, historians and others was set up to pass on applications for permission to restore, adapt or repair buildings in the zone.

Love goes a long way in a restoration project, but turning back the calendar for old buildings—especially on the scale of Old City operations—is an expensive business. Recognizing this, the Commonwealth has made paying for restorations as painless as possible.

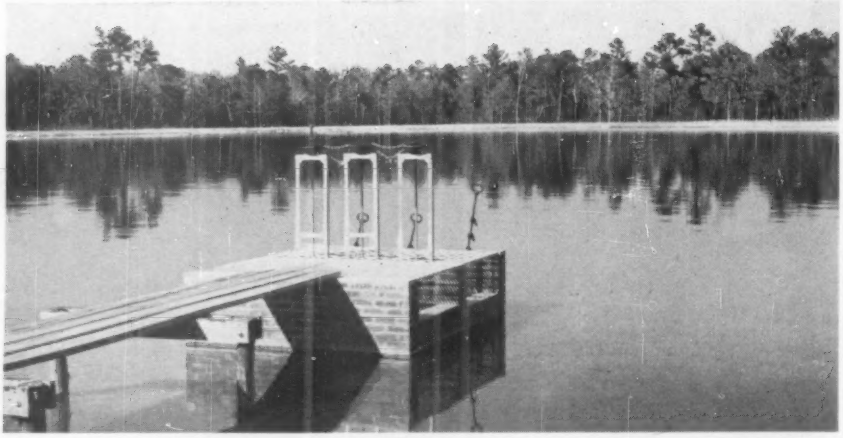
Tax Exemption

The ten-year tax exemption has been extended to the building lot as well as the structure itself. A safeguard against temporizing was written into the law. Restorers get five years of tax exemption by doing initial restoration work and the next five-year exemption when the job is completed. Several houses now are enjoying their first exemption and there will be many more to come.

In addition, the Government Development Bank will lend money to those who want to buy and restore property in the zone. The Institute of Culture adds plums to the pudding by providing free architectural and historical advice and has even amassed a collection of old beams, tiles, iron work, balustrades and other accessories that can be bought at bargain prices for restoration work. The Institute itself got into the restoration effort by buying up two old buildings that were in bad condition; one will be converted with a museum upstairs and a patio and shops downstairs and the other will become a combination art gallery and theater.

The biggest facelifting in town (by the Woolnor Corporation) is turning a large old Carmelite convent into a 100-room luxury hotel in which tourists can breathe authenticity at every turn. The original building dates from the late 1600's. It is being stripped down to the bare walls prior to restoration. When the builders finish with the project, there will be an interior patio for dining and dancing, a quality cafe that occupies the former chapel and four levels of interior balconies that overlook the roofless patio.

The increasing tempo of restoration has taken on a boom quality that provides a strange echo for the burgeoning urban renewal construction boom that extends outward to the far-flung suburbs of the surging city of 600,000. ◄◄



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The outlet structure provides three guillotine gates that regulate the level of the lagoon for optimum algae action regardless of the season.

Fast Action in Savannah's Lagoons

Two oxidation ponds are so satisfactory that another is now under construction and a fourth on the design boards

By **C. C. STEADMAN**, Acting Director*
Department of Public Improvements

Savannah, Ga., has completed two sewage lagoons, one of them adjacent to a top-quality residential area, and their operation has been so satisfactory that two others are under way to serve additional fringe districts.

Since the start of natural purification this spring, officials who only a year ago questioned the wisdom of locating oxidation ponds near residential districts have become enthusiastic about them. They are convinced that where land is available—particularly in warmer, more temperate latitudes — lagooning of domestic sanitary sewage has distinct advantages.

Construction costs are low, though land cost can increase overall outlays when the acreage used is in demand. Action in the ponds is primarily aerobic if the lagoon is properly designed and algae growth is spontaneous and active. Aesthetic value of lagooning already has challenged operators of the Savannah program—fences have been breached by children drawn to the pond. Residents of nearby dwelling areas are attracted by the ducks, white egrets and sea birds that have played their own part in the early activation of these lagoons.

The cool, green serenity of the ponds belies the teeming activity below their surface. Samples of raw sewage in the vicinity of pond inlets show counts up to 110,000 MPN (Most Probable Number), which is high on the index of non-potable (polluted) waters. Effluents consistently test at below 12 ppm of BOD, real evidence of the effectiveness of Savannah ponds.

Extensive but Shallow

The first of Savannah's oxidation ponds, the Windsor Forest Pond, occupies a 25-acre tract, of which 22 acres were cleared. The actual surface area of the pond is 13.46 acres, and normal depth is four feet.

The initial lagoon contract was awarded in November 1958 and construction was started on December 1st of that year. Completion and commencement of sewage purification took place on March 23rd of this year.

The construction cost of the lagoon, including a 500-gpm well and the outfall line, was $129,056. The Largo Drive Station, a half mile of force mains and collector lines costing $59,825, also were constructed in the Windsor Forest area, making the total contract price $188,881.

The excavation involved removal of earth from the cleared central portion of the site and placement of excavated material in the dikes impounding the pond. The elevation of the finished floor of the pond lies at 17.75 feet above mean sea level. The top of the impounding dike is at 24.75 feet, and the surface level is maintained at 19.75, 20.75 or 21.75 feet depending upon the efficiency of pond activity at the various depths.

The dike is 10 feet across its level top, with 1:3 side slopes to the natural ground on the outboard side and to the lower pond floor on the other. The dike is composed of 38,500 cubic yards of excavated material, and 7,300 square yards of soil-cement wearing surface was used to encircle the inboard face.

The outlet structure was built with outfall pipes at three eleva-

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* Mr. Steadman, a licensed engineer in the State of Georgia, began his engineering career with the Georgia Highway Department, then spent 17 years as a railroad construction engineer before joining the City of Savannah in 1957 as Deputy Director of the Department of Public Improvements, Engineering Div. He was elevated to his present position in March 1960.

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The author discusses lagoon treatment with Paul K. Helmly, Savannah's supervisor of sewage treatment plants and lift stations.

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Looking down on the precast Parshall flume through which sewage from the collection system enters the lift station; the flume was precast for assured higher accuracy.

tions. Each outfall pipe into the outlet well is equipped with a guillotine drop gate so that the level of the pond can be regulated to three elevations, at one-foot intervals. This arrangement assures optimum algae growth, regardless of season.

The new Largo Drive lift station, which discharges into the lagoon, is provided with two 7½-horsepower vertical-mount, 550-gallon-per-minute Fairbanks, Morse pumps that lift raw sewage from the wet well. A Sparling Striptograph measures the flow, providing a continuous flow record, accumulated totals and instantaneous flow readings.

Other lift stations in Windsor Forest are the wet-pit type with centrifugal trash pumps and pneumatic ejectors. The smallest lift station is a package underground station serving about 50 houses. This station is a "Monojet," manufactured by Smith and Loveless, Inc.

Wet Well

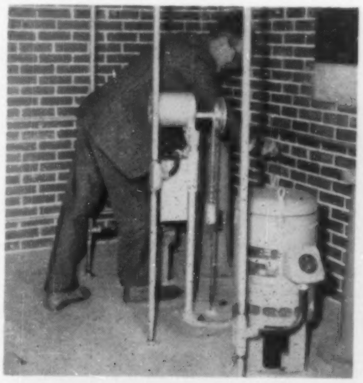
The other pneumatic ejectors in the system are Shone electrode-controlled ejectors manufactured by Yeomans Brothers Company, Melrose Park, Ill.

The wet well is automatically controlled between low-water and high-water levels of 2.25 and 5.5 feet respectively. Sewage enters the well at an elevation of seven feet through a three-inch Parshall flume. The flume is located at the entrance to the well. It was constructed of reinforced concrete, using a prefabricated flume liner as an inside form. Accurate measurement was assured by the predesign and prefabrication.

Effluent from the outfall structure of the pond is conveyed more than a mile by pipeline to a channel that was blasted through saltmarsh to the nearest tidal stream. The grass-green channel is as free of nuisance as the pond itself.

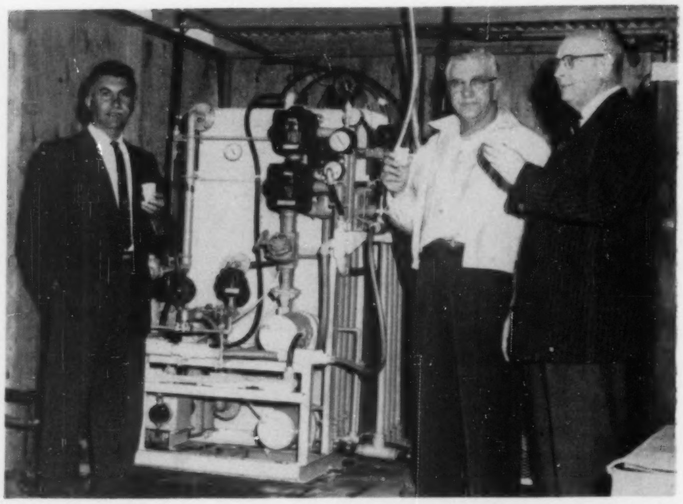
At the present time, peak flows into the oxidation pond run about 300 gallons per minute, and daily volumes average about 200,000 gals.

Algae growth was so rapid that fertilization or seeding was not needed. The city requested that the state fish and game commission stock the pond as a mosquito control measure, but before state forces could act, birds had deposited fish and roe in the pond. Paul K. Helmly, Savannah's supervisor of sewage treatment and lift stations, reports that he doesn't know what kind of fish they are. Though he wouldn't recommend them for pan-frying, he says that he won't argue with nature as long as the fish keep the pond free of mosquito larvae. ◄◄

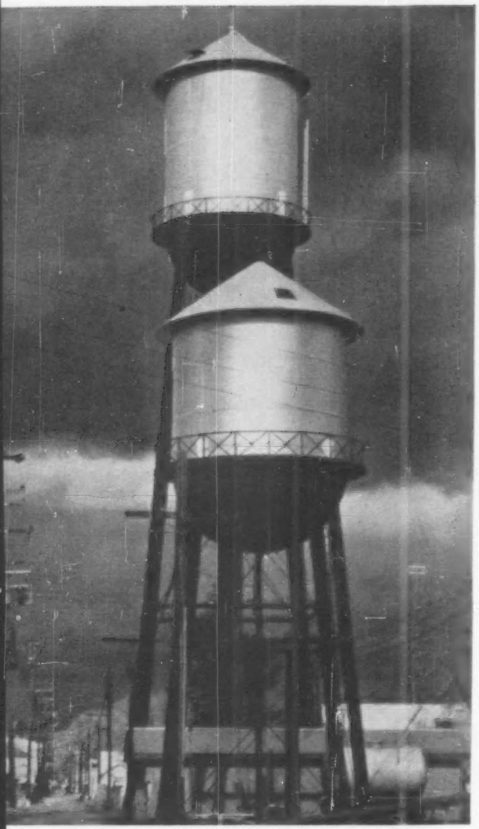


Mr. Helmly opens valve that serves one of two 7½-horsepower, 550-gallon Fairbanks, Morse lift pumps. Other stations in the system use Shone pneumatic ejectors.

Sparling Striptograph provides all information on station performance. Continuous flow records, accumulated and instantaneous flows are shown in this picture.



This Ionics Model 300-B demineralizer was set up near the city reservoir on a trial basis to determine the reaction of the citizenry. Acceptance by the people resulted in the purchase of a larger plant.



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Two water towers supply Coalinga's two separate systems; the upper and larger tank is part of the hard water system and the lower tank serves the domestic or soft water system.

We Use An Undrinkable Water

. . . by "desalting" it in the nation's first water-demineralizing plant, thereby cutting supply costs 80%

By **R. O. PHELPS**
Director of Public Works
Coalinga, Calif.

Water desalting, a subject hardly worth mentioning in most parts of this country, is an everyday occurrence in Coalinga; but it is not taken for granted. On February 27, 1959, the city dedicated this nation's first municipal water-desalting plant. Speculation ran high, and news releases published throughout the country contained not only a brief description of the plant but estimated operating cost data that to some seemed far fetched.

At this writing the plant has been in operation for almost one year and the first six months of operation show that the original estimates were accurate. We are producing an acceptable product at one-fifth the price formerly paid and have confidence that increased savings are forthcoming. Acceptance of the plant product by the citizenry, despite the fact that water previously hauled in was of high quality and exceptionally good-tasting, is also an encouraging endorsement of our installation.

Coalinga has a population of approximately 6,300 persons and is located in a small valley at an elevation of 671 feet. The city is almost totally surrounded by low, barren hills. Average summer temperature is 103 degrees and the annual average rainfall is seven inches. The ground-water table is supplied from the Coast Range Mountains and the water is very hard and unpalatable.

Cost Data

The city is buying the plant under a lease-purchase arrangement at a total cost of approximately $96,000. The building and minor incidentals bring the total investment up to about $105,000. Straight-line amortization based on actual water use breaks this down to an estimated 54 cents per 1,000 gallons.

Operating costs for the first six

months amounted to 89.25 cents per 1,000 gallons, or about 40 cents over original estimates. Some of this additional cost resulted from an increased number of filters needed to keep the unit in operation, but as will be explained later, this problem is being corrected. In addition, the 89.25 figure includes an *allocated* labor charge of 16.67 cents per 1,000 gallons and no out-of-pocket labor charge was included in the original estimate because it was not expected that any additional personnel would be hired for this job. Finally, the load factor influenced these costs. The daily use averaged only 18,000 gallons as compared with the plant capacity of 28,000 gpd.

The total cost of $1.4325 per 1,000 gallons, although higher than original estimates, is considerably less than the $7.05 per 1,000 gallons we formerly paid to haul water from Armona, a distance of some 45 miles. Table I gives a further breakdown of the production costs.

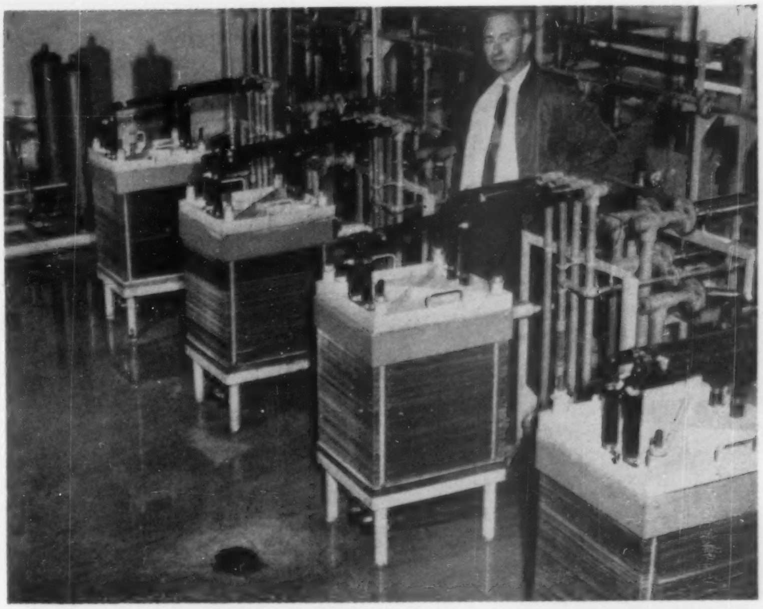
The Ionics Incorporated electrodialysis demineralization plant removes minerals from the water by the ion-exchange process. Basic elements include four demineralizer units, electrical equipment, pumps, chemical-feed equipment, filters, and hydraulic and electrical controls. Our plant has a capacity of 20 gpm or about 28,000 gpd.

Demineralizer

The demineralizer unit or "stack" is made up of numerous layers of special plastic sheets or membranes separated by spacers with channels cut in them, one spacer for water being demineralized and one for waste water. The top and bottom layer of each stack are metal anode and cathode sheets. The plastic membranes are of two kinds and are placed alternately through the stack. One type is permeable to positive ions (cations) only and the other is permeable to negative ions (anions) only.

Each stack, consisting of 150 sets of layers (one of each type of plastic sheet plus spacers) measures about 18 by 20 inches by 21 inches thick. The sheets and spacers are about 0.02 and 0.04 inches in thickness, respectively.

A direct current flows through the stack from cathode to anode, and as water passes through the raw-water spacers, the ions (charged mineral particles) are attracted toward their opposite pole and pass through the membrane selected for them into a waste channel, where they are concentrated.



Coalinga's four-stack demineralization unit transforms a hard unpalatable water into an acceptable domestic supply. Here Mr. Phelps checks the facility.

Raw water is pumped to each of the four stacks in series where it loses about 40% of its mineral content per stack. The 40% theoretical reduction per stack would give a final reduction of 87% in the four stacks. In actual operation, measured removal in the Coalinga plant approximates 83%. The percentage of removal varies with the various elements (Table II, p. 116).

The four stacks operate at the following voltage and current:

Stack	*Volts*	*Amperes*
1	225	11.5
2	195	7.0
3	175	4.6
4	150	3.0

The direct current is obtained by passing the community alternating current power through a rectifier.

All raw water is filtered prior to entering the demineralizer stacks to prevent clogging of the spacers and creation of slime coatings on the membrane surfaces. We used an industrial filter with cartridges and found that filter life was unexpectedly short. Experiments showed that replacement time of the cartridges varied little between the sizes of one micron and five microns. However, the problem has been partially corrected in other ways.

Changing the source of raw water increased filter life from about two to three days. Initially, raw water was obtained from a dead-end main in our hard-water system, but now

Table I

WATER DESALTING COSTS AT COALINGA, CALIF.

March 1, 1959—August 31, 1959

Operating Costs	*Cents/1,000 Gallons*	
Labor	16.67	
Chemicals	6.25	
Parts and Replacement	44.87	
Power	21.46	
Total		89.25
Plant Amortization		54.00
Cost per 1,000 Gallons		143.25 (Approximately $1.43)

Table II
MINERAL REMOVAL AT COALINGA PLANT
Composite Results, February 1959—August 1959

Item	*Raw Water*	*Water Processed*	*% Removal*
pH	8.1	7.6	- - -
Total solids	2392	402	83.2
Hardness	577	38	93.4
Chlorides	257	14.5	94.4
Sulphates	1158	194.5	83.2
Boron	3.3	2.9	12.1

Mineral content expressed in parts per million (ppm).

we obtain it from an active main located near the plant. Our next step was to experiment with a diatomite filter and such a unit has now been installed. Although this unit has been in operation only a short time, it seems to be correcting the difficulties encountered with membrane replacement and filtration. This means less frequent cleaning intervals for and longer life of the membranes and will more than double the life of the cartridge-type filters.

A coating of Super-Cel applied to the diatomite filter gives good filtration of the raw water prior to entering the plant. Experiments indicate that the diatomite filter will have to be washed down and recoated about every five days.

Automatic Operation

The facility is operated on a day-to-day basis by selected men from the adjacent firehouse, assisted by our city mechanic for major maintenance and operation procedures. Thus, a man is always available in case of trouble. Automatic protective devices shut down the unit and ring a warning bell in case of high or low pressures, high feedwater temperature, power failure, and failure to reach desired product salinity as measured by an electrical conductivity cell.

Routine operations include changing filters, mixing acid and soda ash, keeping daily log sheets, and keeping the building clean. The city mechanic takes part in flushing operations and stack cleaning, the latter requiring the work of two men for about 4½ hours. Routine operations take about one hour a day.

Although we planned to run the unit intermittently, we find it more advantageous to operate it continuously. The start-up procedure is rather tedious and actual savings through intermittent operation are rather small. Access water is merely diverted to the nearby hard-water reservoir. At approximately three-day intervals one of the operators "flushes" the unit by turning off the electric power and allowing water to recirculate through the stacks for about eight hours. This procedure removes much of the material accumulated in the stacks and materially increases the time interval between stack cleanings.

Number 1 stack must be cleaned most frequently, since most deposition occurs in this unit. The stack and the system are chlorinated after each cleaning.

Our raw water, obtained from deep wells, has a pH of about 8.1. This is reduced to about 6.5 by the plant and is again stepped up to a pH of 7.6 before entering the system.

Acid is added to the waste water in the system to maintain a waste pH of 6.1—slightly below the pH of calcium carbonate saturation—to prevent $CaCO_2$ deposition in the waste water spacers. In addition, an acid electrode flushing stream is maintained at a pH of 3.2 to keep the electrodes free of deposition. We use about two pounds of sulphuric acid per 1,000 gallons in this pH control.

Power consumption over the first six months averaged about 11 kilowatts per 1,000 gallons for demineralization only.

Two Systems

The changeover from hauling domestic water to demineralizing our own hard water was easy for Coalinga because the city has maintained two separate distribution systems since 1931. The domestic or soft-water mains range from two inches down to ½ inch in diameter. In most homes this water is piped to a single tap at the kitchen sink and is used primarily for drinking and cooking. Daily use runs around 18,000 gallons, or about three gallons per capita per day.

Although the analyses on the raw water show less than 10% variation, there has been a rather wide variation in the product water. However, since it is pumped to a 75,000-gallon elevated tank for storage before distribution, and since daily use averages only 18,000 gallons, our citizens receive a fairly uniform product.

The Armona water, which was shipped in by rail and pumped into the elevated tank for delivery via the distribution system, was sold to the consumer at a price of one cent a gallon.

We still maintain this same price to the customer. This pays for the lease and service cost of the plant and allows a small fund for main repairs and extensions. In another two years the capital cost of the plant will be paid up, and at that time cost of water to the customer will be reduced . ◂◂

Annual Report Is 1960 Calendar

Columbia, S. C., has added to the growing list of ideas for attention-getting municipal annual reports. Its latest effort goes to the public in the form of a 1960 calendar.

The calendar begins with February of this year and continues to the end of January 1961. In 6x9-inch size when received, its pages open upward to a full 12 inches. A calendar for two months of the year occupies the bottom fourth of every page.

The space above is devoted to the report itself, and brings Columbians up to date on matters of administration, recreation and beautification, culture in their city, urban renewal, health, fire and police protection, water supply and public works. One page lists highlights of 1959 and the last page details the city's budget and outlines what's ahead in Columbia's future.

The calendar is illustrated with both black-and-white and dazzling color photographs, and is printed with black type on a background of either light blue or brilliant yellow.

The total effect is bright and optimistic, and is designed to stimulate Columbia citizens, as Mayor Lester L. Bates states in the foreword, to greater personal interest in the progress, finances and problems of their city. ◂◂

EXPIRED
60 MINUTE LIMIT
EACH PENNY — 6 MINUTES
EACH NICKEL — 30 MINUTES
ONE DIME — 60 MINUTES
COIN
1 HOUR

ON - STREET

OR

OFF - STREET

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Installing Lights and Signals in Los Angeles

One day last fall the operation shown in the first photograph was performed by a contractor's crew installing light standards in the Pico-Rivera area of Greater Los Angeles.

Kenneth K. Kellstrom, superintendent of street lighting for Fischbach and Moore, Inc., electrical contractors, is credited with developing this parachute-cable threading technique and has supervised most of the firm's street lighting projects in Southern California during the last ten years.

The Pico-Rivera project, which he directed, included the installation of 444 light standards on 11 separate circuits. Completed last December, the $188,129 job is said to be the largest street lighting contract awarded to date by the County of Los Angeles.

Freeway Work

One of the most challenging jobs Fischbach and Moore street lighting crews have done was the installation of soffitt lights in the overhead of the Long Beach-Santa Ana freeway interchange a few miles east of the Los Angeles Civic Center.

"We were allowed a tolerance of only 1/64 of an inch in placing these lights," Kellstrom recalls, "since finished steel and concrete work had to be completed after the lights were installed. Measurements for this job, and similar ones on other freeway bridges and overpasses, had to be more exact than many building projects require."

The contractor's crews have also installed electroliers and street-sign lighting along the world-famous Hollywood Freeway, as well as the Santa Ana, Long Beach and Golden State freeways.

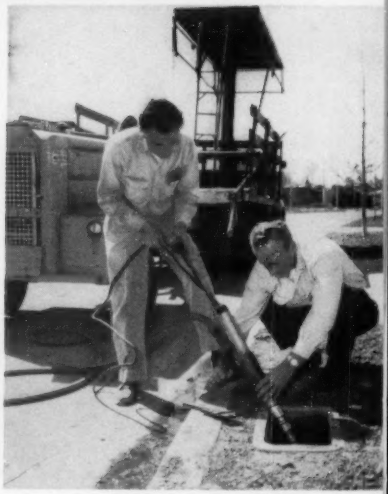
Crews from the electrical contracting firm recently completed illumination work on Firestone Boulevard, one of the 105 arterials in Los Angeles which accommodate more than 500,000 vehicles per month.

On the mile between Paramount and Brookshire Avenues, 38 steel light standards were set up and equipped with the 35,000-lumen mercury vapor lights.

Since nearly all conduit work is bored beneath the ground to avoid marring streets and grounds with trench-like excavations, ground conditions are highly important. If the soil is loose enough to permit boring, an examination will reveal any underground obstacles. Should pipes or wires laid by utility companies be found, then excavation work must be done to avoid interrupting their services. Damaged telephone lines, for example, can result in $8,000-a-minute losses.

Boring or excavation work is done, cable is parachuted through conduit (or pulled through with a lead-wire if more than a single cable is run through a single pipe), and the concrete foundation is laid.

(Continued on page 121)



Small leather parachute, attached to ¾-inch cable, is guided into conduit opening and crewmen adjust air-compressor connection which will force air through the pipe, sending the parachute and the cable through 150 feet of conduit.

Using a hydraulic lift truck to install a 4,000-lumen fixture on a concrete Marbelite standard made by Pacific Union Metal Co.

Transformer base of a Marbelite standard on Firestone Boulevard.

Recordak announces the new
RELIANT 500 Microfilmer

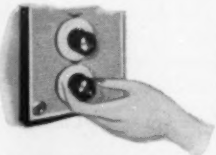
Here's the fastest, most versatile microfilmer ever built!

Only half the size you'd expect a large-volume microfilmer to be! Yet this new RECORDAK RELIANT 500 Microfilmer lets you handle *more* work *more* efficiently than ever before!

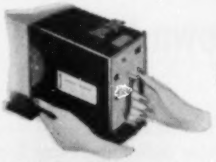
New performance. In one minute, for example, it photographs the front and back of 500 checks . . . indexes the film . . . even endorses or cancels each item when optional RECORDAK endorser is used. Operation is automatic. Precision controls "supervise" over-all machine performance . . . prevent double feeding . . . make your operator's job unbelievably trouble-free.

New convenience. Operator simply slides out film unit to load film, or to substitute unit with different reduction ratio (40 to 1, 32 to 1, 24 to 1). This also makes it practical for each department to microfilm with its own film unit—unitizing their work and reducing need for extra microfilmers.

New styling. The RELIANT 500 Microfilmer's trim good looks complement today's modern offices—reflect, in still another way, the experience gained by RECORDAK in thirty-three years of microfilming research and development.



Kodamatic indexing controls give you up to 100 different code settings for rapid reference to film images.



Film units can be interchanged in seconds to handle work of various departments more efficiently.

RECORDAK endorser (low-cost accessory) lets you cancel or endorse items while microfilming them.

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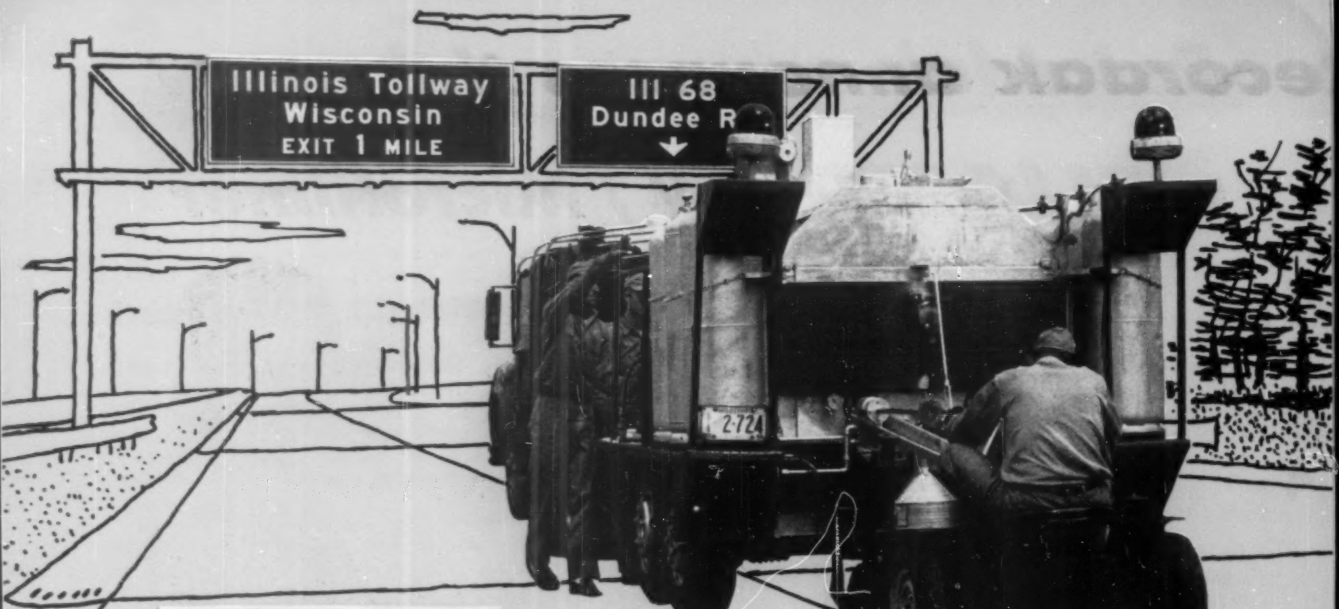


Cataphote crew lays long-lasting Catatherm on Eden's Expressway—Chicago.

Cleanly extruded Catatherm hits and bonds to pavement at approximately 400° F. Stripe is traffic-ready 3 to 6 minutes later.

Catatherm Reflective Thermoplastic Striping goes down easy . . . stays down longer

This is Eden's Expressway on Chicago's North Side . . . one of the world's busiest thoroughfares. Pavement markings of ordinary traffic paint have little chance of survival here.

To solve the problem of "short life" markings, the Illinois State Highway Department turned to Catatherm . . . Cataphote's reflective thermoplastic striping material. Composed of specially formulated thermoplastic resins, pigment and over 40% reflective traffic beads, Catatherm is hot extruded directly and securely onto any pavement . . . is available in white and yellow. Cataphote waterproof drop-on traffic beads, applied simultaneously with the extruding operation, provide immediate all-weather reflectance . . . add longer life to the stripe.

Catatherm can mean a brighter safety picture for *you* in the actual striping operation. Striping equipment at work creates a traffic hazard . . . the possibility of accident is always present. Drastically reduce restriping and this danger is virtually eliminated. You can do this with Catatherm . . . it outlasts good quality paint stripes from 9 to 26 times . . . saves plenty of maintenance dollars, too.

Pace setters in traffic control have recognized the advantages of Catatherm. Now, they "STRIPE IT . . . AND FORGET IT." Like to be a leader, too? Let us tell you more about Catatherm. Write for Catalog C-160.

CATAPHOTE CORPORATION

TOLEDO 10, OHIO / JACKSON, MISSISSIPPI

MANUFACTURERS OF REFLECTIVE TRAFFIC PRODUCTS

(Continued from page 118)

The poles are erected just before finishing touches are put on the concrete work.

Safety for the crews and for pedestrians and motorists is a major consideration. Well-lighted barricades and warning signs are always used. Under Kellstrom's supervision, Fischbach and Moore traffic signal crews set up the first "PR-2" traffic control system which was installed on Lakewood Boulevard for the State of California to alleviate strangling traffic conditions caused by thousands of commuters going to and from nearby aircraft plants. Traffic often stacked up for several miles during peak hours. Now, the signals are synchronized, allowing traffic to move without interruption for long intervals. During slow hours, the signals operate independently.

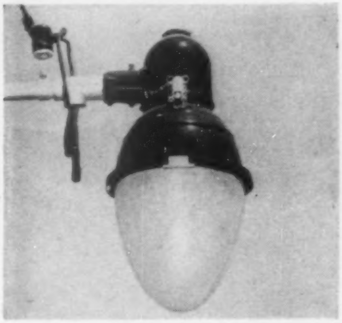
From its western division headquarters at 646 North Beachwood Dr., Los Angeles, Fischbach and Moore have also directed street lighting projects for San Diego, Bakersfield, San Bernardino, Riverside, and Oxnard in southern California, and in Tucson, Ariz. Other offices, in major cities throughout the United States, have been awarded contracts for similar work in their areas. ◄◄

Street Light Globes That Baffle Vandals

Fiberglass street-light globes that do not break at the onslaught of vandals have been developed by Plastic Age Sales, Inc., Mint Canyon, Saugus, Calif., in cooperation with a leading Southern California utility. Made of a special modified polyester resin, reinforced with chopped fiberglass, the new globes withstand bb shot and rocks. Rifle bullets of .22 and .38 calibre penetrate the globe but the glass fibers tend to reseal. Dropping the globes from a 40-foot height did not crack or shatter them.

The new globes weigh less than 1/10th that of glass globes, and may be stored one inside the other without breakage. One carton of 12 units may be easily carried by a single man. Storage area is reduced by 90%. Work crews are safe from broken, jagged glass edges. Pedestrian and auto damage from glass-strewn walks is eliminated.

Light-transmission qualities are excellent and the globes are not affected by temperatures in the range of -20° to 350° F. Laboratory tests using 6,000 and 10,000-lumen lamps have shown no deterioration.



This globe has vandals wondering.

Each globe is furnished with a special neoprene gasket designed to fit a particular luminaire. Among the towns and cities using the Plastic Age fiber glass street light globes are Los Angeles, San Diego, Santa Barbara and San Francisco. ◄◄

Does Highway Lighting Match 40-mile Driving?

Two papers read at the Illuminating Engineering Research Institute's third research symposium, March 3, 1960, dealt with proper highway lighting for usual highway speeds.

Dr. H. Richard Blackwell, director of Ohio State University's Institute for Research in Vision (Columbus), indicated that recommended practice in highway lighting may be 50% below the level needed for safely stopping a vehicle moving at 40 or 45 miles an hour. Recommended practice is 0.2 to 1.2 footcandles. Dr. Blackwell's measurements, using a new version of his evaluator, showed a need for 0.7 to 2.8 footcandles.

Additionally, the curb lane—the lane which pedestrians enter when stepping from the sidewalk—requires about twice as much light for relative safety as the center or driving lanes, Dr. Blackwell said.

Benjamin S. Pritchard, also of Ohio State University, in a paper that Dr. Blackwell read in his colleague's absence, reported that 300-watt spotlights, mounted on 28-foot poles so that their beams are directed away from the driver's line of sight and at an angle of 40 degrees from the perpendicular, can produce safe visibility up to 136 feet in a fog which, in daytime, would reduce visibility to a scant 60 feet.

Dr. Blackwell, who two years ago developed a system for predicting the lighting needs of indoor seeing tasks, recently adapted his method for use on outdoor tasks. Initial use of this development has been in roadway and highway lighting studies in Columbus, Cincinnati, and Dayton. In these tests Dr. Blackwell used a mannequin, approximating the stature of an 11-year-old girl and life-size models of black and white terriers. In some instances he also dropped other obstacles, such as bricks, tin cans and simulated "holes in the road," into his field of view to heighten the realism of his results up to 200 feet away from his observation post.

"We have not satisfactorily cracked this tough nut," Dr. Blackwell said. "In the meantime we believe we can safely say that recent special lighting installations, such as those being made on busiest downtown shopping streets, which deliver up to 2.8 footcandles, are about right."

Since 1.2 footcandles is the top of the range published in current recommended practice for highways, the amount of light now found on most illuminated roadways and highways at night should be at least doubled to attain the degree of safety recognized as practical in the Blackwell tests. Furthermore, since curb lanes require twice as much illumination as driving lanes, lighting in some instances should be quadrupled to meet this safety level. ◄◄

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program to provide

General Electric introduces *PREFERRED LIGHTING* —a new program offering *exceptional customer service* on outdoor-lighting systems.

With *PREFERRED LIGHTING* you get a full selection of fast-moving equipment—equipment most preferred on a national basis as evidenced by present purchases—plus application analyses combining the latest lighting trends and the most economical and effective ways to do specific lighting tasks.

In addition, *PREFERRED LIGHTING* makes possible exceptionally fast delivery of street-lighting systems. On products of our own manufacture, equipment is usually in your hands in one to three days after receipt of your order.

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QUICK DELIVERY—one-to-three-day delivery is maximum for most General Electric *PREFERRED LIGHTING* equipment including pole anchor rods and base templates. Poles can be ordered for one- to four-week shipment, allowing time for curing concrete bases prior to installation.

LIGHTING... a new General Electric

more light per dollar on America's roadways

you are interested in solving. These systems have met the test of customer evaluation in terms of cost of light, and over-all operating and maintenance economy *... your best guarantee of a modern lighting installation.*

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Get your *PREFERRED LIGHTING* Designer's and Buyer's Guide, today! Use it as a basis for a thorough evaluation of your present buying practices, in comparison with the benefits offered by General Electric's *PREFERRED LIGHTING* approach. Your G-E Apparatus Sales Engineer or Agent will be happy to help. General Electric Company, Outdoor Lighting Dept., Hendersonville, N. C.

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EASY APPLICATION saves you the time and expense of designing individual layouts, and considering distribution patterns, spacing, mounting heights, and maintenance factors. Selection of *PREFERRED LIGHTING* equipment is a simple matter of deciding on source and footcandle level.

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Merced Decides on Mercuries

The City of Merced, Calif., has had under study a street lighting program in the downtown business district. The program originated in the fall of 1956 with the assistance of the Pacific Gas and Electric Co., and various electrical supply companies. The first object was to determine the merits of mercury vapor, incandescent and fluorescent lighting. Various cities were asked for information relative to recent street lighting programs and trips were made to some of the cities to observe the installations.

At this date, there is nothing definite as to when a street lighting program will be undertaken in the City of Merced; however, $50,000 has been appropriated in the capital improvement program for it. The balance of the program, approximately $50,000, is to be financed through an improvement district. We have decided to install mercury-vapor units.

The City of Merced has adopted a subdivision ordinance which requires the subdivider to install the street light system and controls. Standard specifications have been adopted. Standards will be round-tapered steel poles with the following acceptable equipment: multiple service—Union Metal or Weld Rite; series service—Union Metal or Weld Rite with 25′ 6″ nominal mounting height. The luminaires will be manufactured by one or more of the following companies: General Electric, Line Materials, Westinghouse Electric and Joslyn Manufacturing and Supply. Lamps will be 4,000-lumen series or multiple as determined.

In areas where street lights have not been installed we encourage the property owners to petition the City Council for an improvement district. Such an improvement district was completed in the Cavanna Square area. The owners had 60 days in which to pay off the assessment of $61.37 per property owner. If they did not choose to pay off the assessment within the 60-day period, they could pay it off over a two-year period at the rate of 4% interest, or a total cost of $66.28 per property owner. No bonds were sold for this improvement district but funds were transferred from the general fund with interest at 4%.

GEORGE H. MIM MACK
City Engineer

Typical installation in the Cavanna Square area.

No Utopia in Street Lighting

Mamaroneck, N. Y., has made yearly progress in this field for 15 years but in my judgment no community ever reaches a utopia in street lighting progress.

Rapid changes are caused by growth and improvement of fringe areas, the building up of industrial areas and recreational areas and scores of other factors require constant study and periodic adjustment and increase of street lighting.

Starting 15 years ago, when the 1,000-lumen light was practically all we had on our 50 miles of streets, except in the business section where frosted glass globes kept in most of the light the 2,500-lumen lamps produced, we engaged in a program that has continued yearly.

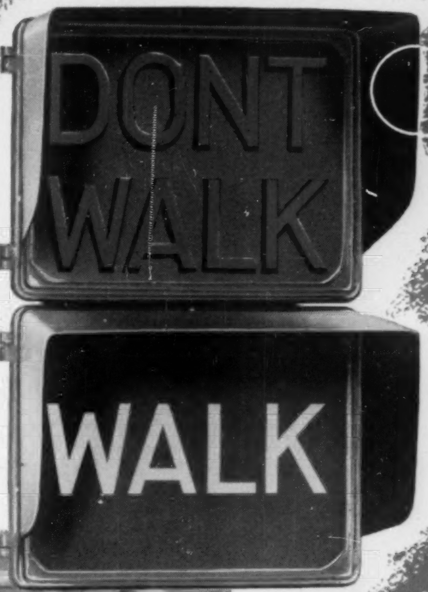
The first step was to replace all 1,000-lumen lights on all heavily traveled highways with 79 R's and to place 2,000 lumens on certain residential streets. This took eight years to accomplish, the village purchasing all fixtures.

When the mercury vapor was introduced, we immediately replaced our 79 R's with mercury with photoelectric controls, thereby getting away from a controlled facilities charge by Consolidated Edison. The 4,000 79 R's that were removed were placed on highways where traffic had increased.

In the last five years we placed mercury vapor units in front of all schools, fire houses, churches and places of public assembly. This, of course, was to protect the pedestrian traffic entering and leaving. Our equipment has been purchased from General Electric in most instances.

WILLIAM H. JOHNSON
Village Manager

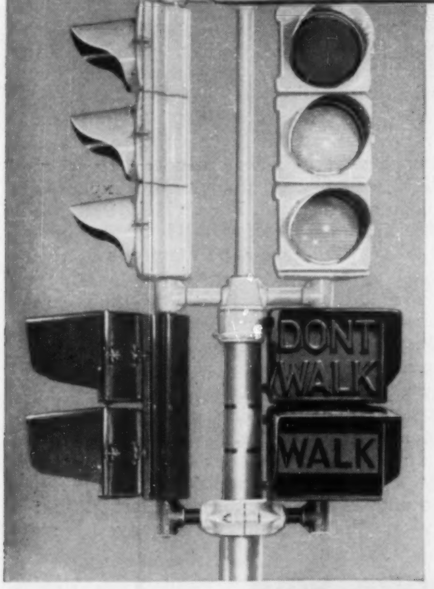
New CROUSE/HINDS



INCANDESCENT

Pedestrian Traffic Signal

MP-120



- **Larger . . . brighter . . . more readable**
- **37% more effective lens area . . . 9″ x 11″ prismatic lens**
- **Ideal for crossings 50′ - 60′ wide**

Ideally suited to residential areas, school crossings, small shopping centers, etc., the MP-120 offers significant savings over more expensive neon units designed for crossings up to 125′ in width.

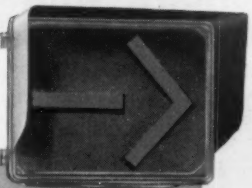
The "Walk/Don't Walk" legends and the rectangular shape of the signal distinguish it instantly as a signal for pedestrians . . . impossible to confuse with circular signals for vehicular traffic.

Simple in design, modern in appearance, the MP-120 mounts with standard signal brackets, without special fittings. Arrow indicators, in place of "Walk/Don't Walk" legends, are available for multiple-street vehicular indications.

For engineering and service assistance, Crouse/Hinds maintains a nationwide network of sales engineers and distributors to assist you in engineering and service situations. For the name of the Crouse/Hinds representative nearest you, call or write any branch office.

ABOVE — MP-120 Installed on Standard Signal

RIGHT—Arrow for Vehicular Use MP-110



WRITE for Bulletin #2716 containing complete information and specifications on the MP-120 Pedestrian Traffic Signal today.

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Crouse-Hinds Company of Canada, Ltd., Toronto, Ont.
Crouse-Hinds Instrument Company, Inc., Silver Spring, Md.

"The alley program is unquestionably a first," and here is one equipped with 25,000-lumen mercury vapor lights.

25,000-Lumen Mercuries for Louisville's Residential Areas

The City of Louisville, Ky., is finishing the first stage of a dramatic and unique street-lighting program. It is based on the hope that bright lights can put new life into a residential area the way they have revitalized business districts across the country.

Louisville is installing 25,000-lumen mercury vapor lights not only in every street but also in every alley in a large, predominantly residential area. The area covers about two square miles between the downtown shopping district and the University of Louisville. In bygone years one of the most desirable sections of Louisville, this area today shows signs of decay, particularly on the fringes. Areas with more severe blight lie on either side.

"A lot of people have been moving out of this area, as well as other areas near the downtown," says Mayor Bruce Hoblitzell, who spent a lifetime in the real estate business before becoming mayor. "We're going to light them up and make them more attractive, safer places to live."

About 1,000 lights are being installed. This is probably the biggest residential lighting program, using new and powerful mercury lamps, in the nation. The alley program is unquestionably a first.

Hoblitzell regards this as just a beginning. The city, he says, will put the mercury lamps in other residential areas as soon as funds are available. The theory is this: If people are afraid to walk to the corner drugstore after dark or to leave their cars overnight in alleys behind their homes or to sit in their back yards on hot summer evenings or to walk through alleys to visit neighbors, it is only a matter of time until they join the rush to the suburbs —and leave the older areas to further deterioration.

In 1958, as an experiment, Louisville installed bright mercury lamps in a single alley. Skeptical newsmen a year later found residents enthusiastic. The only complaints, in fact, came from people who wished the lights were closer to their homes instead of down the alley.

In its present program, the city is spacing the street lights 165 feet apart, the alley lights 200 feet apart. Thus no home is more than 100 feet from a light in front and behind. Previously, the streets had 6,000-lumen incandescents, which were less than one-fourth as bright as the new mercuries. Few of the alleys had any lights at all.

The street and alley lights are the high points of an informal renewal program in the mid-town area. Other city improvements have included street resurfacing, alley resurfacing, playground expansion, and housing code enforcement. Mayor Hoblitzell, who lives in the area, says he can already tell that property owners are taking the cue and improving their properties.

The lights are in part due to a long-time campaign waged by former Mayor Charles P. Farnsley, who during his term (1948-53) gained something of a national reputation for his fresh approach to urban problems. Farnsley has been urging ever since leaving office that street lights will do much to make older areas more appealing to families.

The street lights are owned and installed by the Louisville Gas & Electric Co., under a standing contract with the city. Traffic Engineer Wilbert F. Watkins is supervising the program for the city. ◄◄

Luminaire with Plastic Refractor

A luminaire with a tough plastic refractor is now available for rural or suburban lighting. With a built-in ballast it takes up to 250-watt mercury vapor lamps or without ballast up to 6,000-lumen filament lamps. It is said to be the first open acrylic refractor. All units have a locking receptacle so they can be used with the new General Electric cadmium-sulphide photoelectric control for automatic dusk-to-dawn lighting. The luminaire is made by the Outdoor Lighting Division, General Electric Co., Hendersonville, N. C. ◄◄

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Keep your parks, playgrounds and playing fields in use after sundown ...with money-saving WIDE-LITES

Wide-Lites add hours of enjoyment every day to your recreational areas. With their exclusive rectangular reflectors, Wide-Lites give a broad, even light pattern that is essential to eliminate "hot spots" and shadows from playing fields.

Each Wide-Lite with color-corrected mercury vapor lamp will do the work of *two* or *more* incandescent floodlights—reducing the required number of poles, cross-arms and fixtures. And operating on 460 volts, Wide-Lites require 50% less transformer capacity, with smaller conductor wires. Wide-Lites make practical low-cost underground wiring for floodlights!

Find out how much better lighting you can get with Wide-Lites—and how much less it costs! Send the coupon today.

Resists vandalism! Wide-Lites are made of rugged cast aluminum and have tempered glass lenses to resist vandalism and the punishment that floodlights get from wind and weather. Relamping is easy, but with 7000-hour lamp life (seven times as long as incandescent), it's seldom needed!

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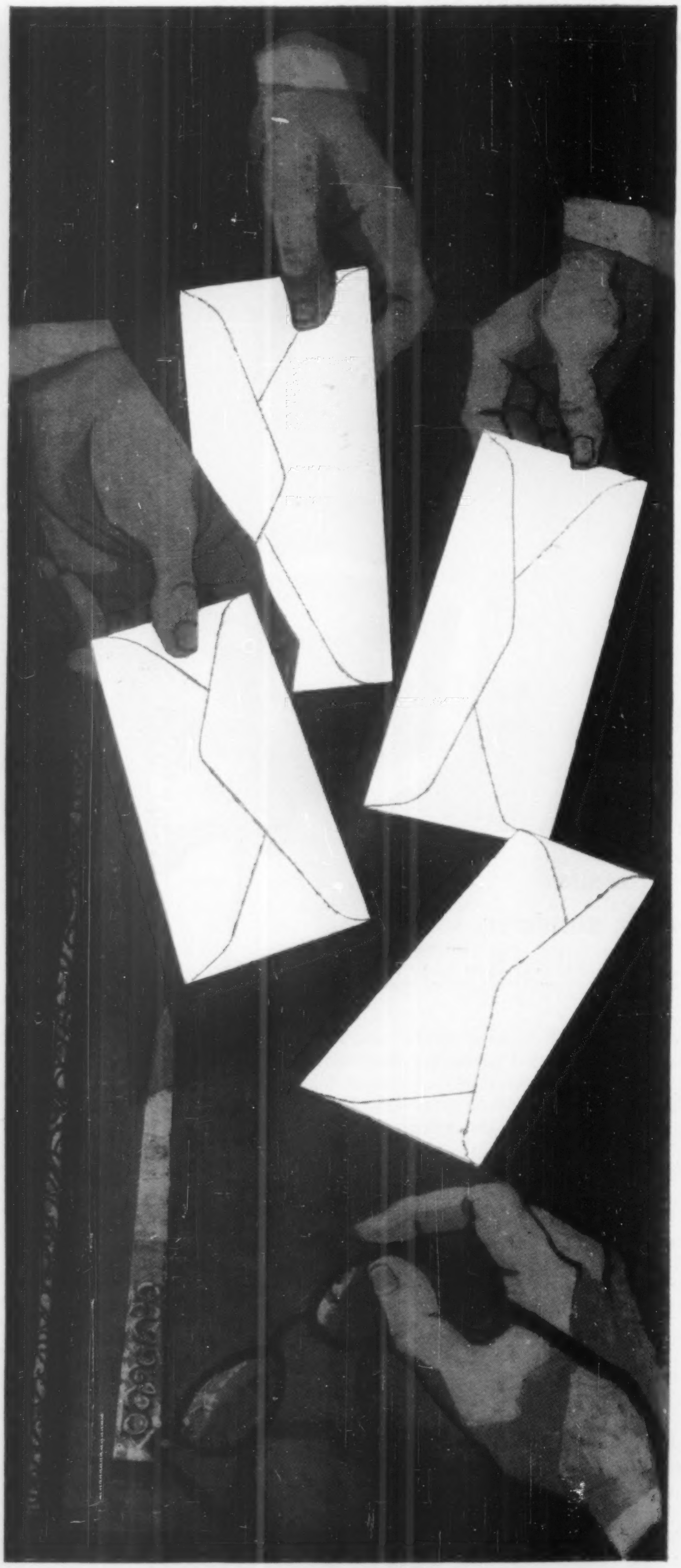

How to be sure you make the right choice after the Rock Salt bids are in

FIRST consider the company behind the product. What is its reputation, who does it serve, what are its resources? In terms of reputation, service and resources, the Morton Salt Company is the leader in the industrial salt field. Morton's outstanding reputation has been built on years of service to industries and municipalities throughout the United States. Now Morton, America's only nationwide salt company, can offer rock salt for ice control to users everywhere in the country from conveniently located salt sources and warehouses. And Morton numbers among its rock salt customers hundreds of towns and cities and many of the nation's counties, states and toll roads.

NEXT satisfy yourself that the bidder can keep his promise. Make sure he can deliver rock salt from a source near you, the fastest and most economical way. To better serve rock salt customers in the East and Midwest, Morton recently opened a giant new rock salt mine strategically located at Fairport, Ohio. The storage, loading and transportation facilities at the Fairport Mine, like the facilities at other Morton sources, insure you prompt delivery on whatever quantity of rock salt you order.

NOW make your purchasing decision. Base it on your evaluation of the company, its record and its ability to serve you. When you decide on Morton you can rest assured that you have made the wisest choice. You can depend on Morton to give you dependable prompt service on the rock salt you need, when you need it.

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INDUSTRIAL DIVISION
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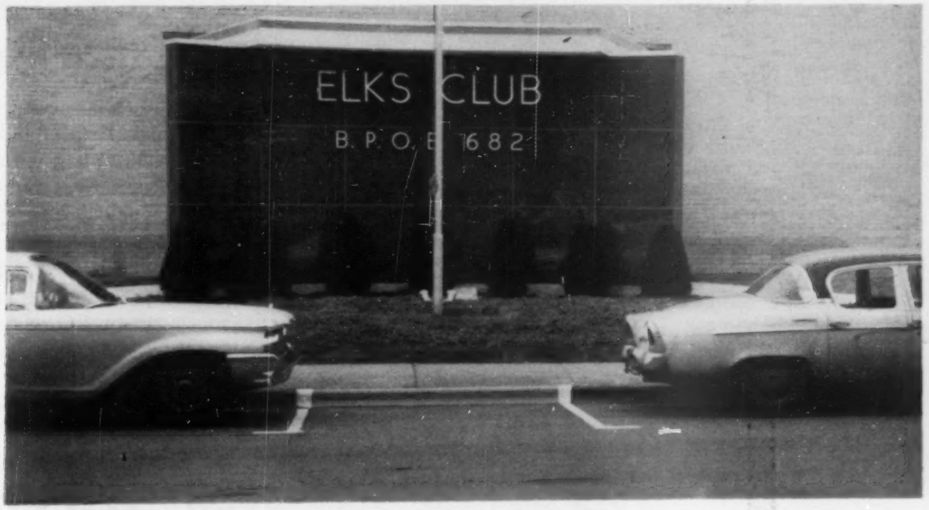
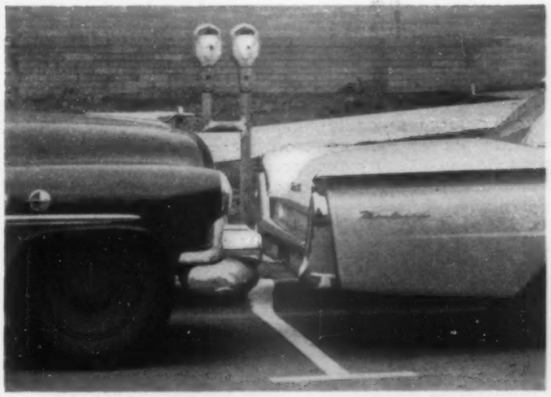


"Skip Parking" in Jacksonville



The skip parking system in Jacksonville, Ill., is used only on streets having parallel parking spaces. Whereas we formerly used continuous spaces of 22 feet each, spaces are now arranged insofar as possible in pairs of 18-foot spaces with an eight-foot "buffer zone" between each pair of spaces.

We use single-head Dual parking meters in our system; special posts were fabricated locally to accommodate two meter heads. These double posts are located at the division line between the spaces; one driver uses the meter at the rear of his car, the other is at the front of the other car.

With cars parked bumper to bumper in pairs, the "buffer zones" afford ample room in which to enter or leave the parking spaces.

CHARLES P. RUNKEL
Chief of Police

Three Rivers Reports on Traffic

The 1959 report of the Three Rivers, Mich. (8,000 population) Police Department says traffic accidents were reduced 4% and that there was not a fatal accident.

Parking meters in service December 31 numbered 196. During the year all meter heads were removed and painted in colors to denote different parking limits:

Red	**12 minutes**
Grey	**1 hour**
Yellow	**2 hours**

Also during the year 25 speed checks were taken, 19 intersections were surveyed and three traffic volume counts were made.

After presenting 12 pages of accident statistics for the city, the report recommended that the city engineers review the 1957 traffic survey made of Three Rivers by the American Automobile Association and determine if installation of certain recommendations might alleviate some of the causes or contributing factors. These included:

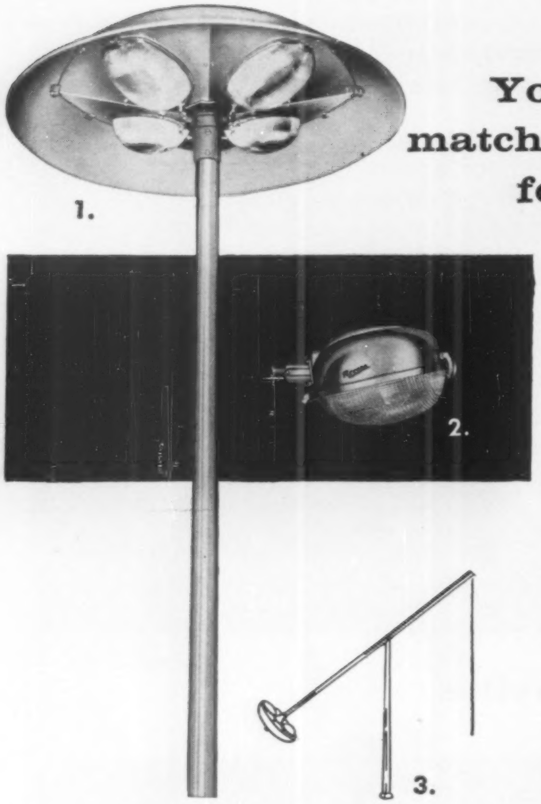
Installation of No Parking signs in areas where parking is prohibited, better to inform drivers of the regulation.

Installation of delineators along the edge of Michigan Avenue to guide vehicles around the curve.

Prohibiting angle parking between the edge of the travelled roadway and the sidewalk.

Reviewing the parking stalls for correct length, 20 feet or 18 feet with a maneuvering space of 4 feet between every two parking spaces.

MILTON C. JONES
Chief of Police
Three Rivers, Mich.



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1. **Revere Ultra-Lites** *are attractive and efficient for illuminating large areas brightly and uniformly. Each Ultra-Lite houses four 400-watt mercury lamps positioned to throw a square light pattern with wide coverage that cuts pole requirements 50 to 75%.*

2. **Endoval luminaires** *are used to light shopping-center parking lots, automobile sales lots, store fronts and similar applications where high intensity, glare-free light is desired. Uses 250 or 400-watt mercury lamps.*

3. **Revere hinged poles** *make for safe, economical lamp maintenance at ground level. Eliminates need for boom trucks or ladders.*

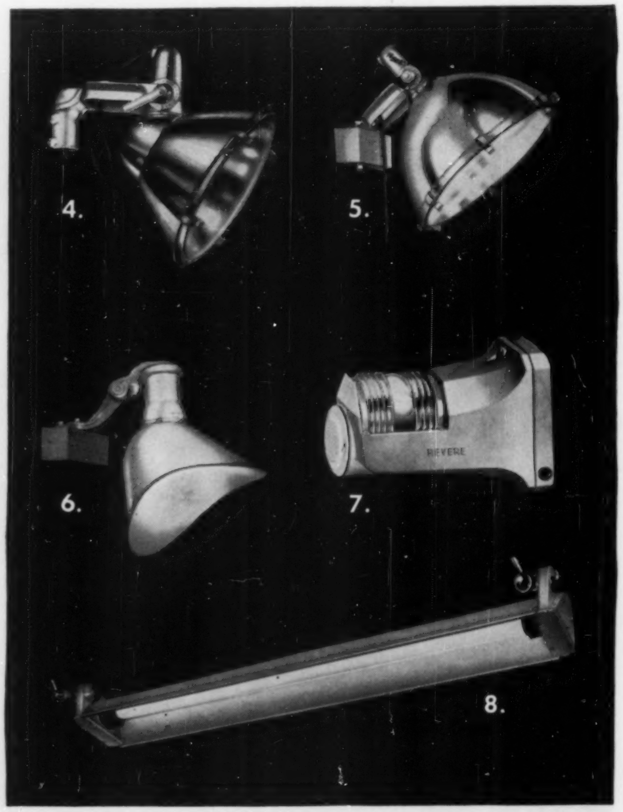
4. **4200 Series** *floodlights provide efficient large-area lighting for sporting fields, storage yards, buildings, etc., using 750, 1000, or 1500-watt incandescent lamps with wide or narrow-beam reflector.*

5. **7400 Series** *floodlights use 1000-watt mercury lamps to provide exceptionally high light output for railroad yards, sports fields, parking lots and other large-area applications.*

6. **3800 Series** *Eliptor floodlights are an economical source of high intensity lighting for smaller area, general-purpose applications. Eliptor floodlights are available for 300- to 1500-watt incandescent lamps.*

7. **3151 Series** *underneath floodlight provides unusually attractive lighting effects for buildings or other vertical surfaces.*

8. **Fluoresign** *outdoor luminaire is highly efficient, economical way to illuminate poster panels, store fronts, highway signs, painted walls and other surfaces, using HO, VHO, SHO or Power Groove lamps.*



Right-Hand-Drive Compacts

The author, Mayor Richard Vander Plaat (in car), and Chief of Police Louis Risacher with Fair Lawn's American Metropolitan which has a right-hand drive for checking traffic.

Reading The American City magazine has paid off for the Fair Lawn, N. J., Police Department. Efforts had been made for several years to replace a worn-out three-wheel motorcycle that was being used for traffic control.

An article (The American City, March 1959, p. 132) concerning the use of a right-hand-drive American Metropolitan by the Burbank, Calif., Police Department gave us the answer to our traffic control problem. Our small car, purchased in July 1959, has proved itself worthwhile both in usefulness and in economy.

Our community has a population of 38,000 in an area of 5.4 square miles and has four relatively small and widely scattered shopping areas. The car, equipped with a two-way radio, has proved its value in mobility and use in all kinds of weather.

In six months of operation the car has been driven 3,518 miles and has averaged 12 miles to the gallon including idling time. Outside of regular maintenance five quarts of oil have been added and $6 spent replacing the points.

The experiment has been so successful that small cars are being considered for use by other employees who do considerable driving within the borough.

W. T. Williamson
Borough Treasurer
Fair Lawn, N. J.

Public Transport in Five Great Metropolitan Areas—Part II

Philadelphia is making bold and imaginative efforts to enlarge its transit system and make it more useful. The mere existence of rapid transit has been a blessing to the city. One cannot conceive of Philadelphia's narrow downtown streets carrying the traffic necessary to make this great city live.

In 1960 the city plans to start extending the Broad Street subway south for 1½ miles. Here, the city expects to build a large parking lot for 2,000 cars. The proposed southern terminal is close to the Walt Whitman Bridge which brings many commuters from New Jersey. Planners hope that the extension and the parking facilities will encourage motorists to use rapid transit instead of driving to the center of Philadelphia.

Philadelphia, the nation's fourth largest city, is an important industrial center with a population of 2,200,000. Its central business district accounts for 41% of the total employment.

Philadelphia's central area is built on an obsolete gridiron street pattern. With the exception of a few major arteries such as Broad and Market Streets, all of the streets are extremely narrow and congested.

Of the 600,000 people who enter downtown Philadelphia on an average weekday, 57% enter by public transportation (including commuter railroad). During rush hours, however, 75% enter by public transit.

Two transit systems bring this large number of people downtown. The first is the subway and elevated lines operated by the Philadelphia Transportation Co. The second is the commuter railroad system which is operated by the Pennsylvania and Reading railroads.

The Philadelphia Transportation Co. is the primary operator of mass transit in the area. Although it is a private company, it operates facilities owned by the city, or by the Delaware River Port Authority. The history of this peculiar arrangement goes back to 1907 when the old Philadelphia Rapid Transit Company completed the Market Street elevated. This represented one of the few cases where a private company spent its own capital funds to build a rapid transit line. The company, however, ran out of funds to build additional rapid transit lines and the city undertook to construct the additional lines needed.

The rapid transit system is well integrated with the surface system. Unlike Chicago, the rapid transit facilities in Philadelphia have always been operated on a unified basis. Although rapid transit equipment in Philadelphia is not nearly as modern as in Chicago, the city placed an order with the Budd Co. in 1959 for 270 new rapid transit cars to replace completely old rolling stock on the Market-Frankfort Division. These will be delivered in 1960-61.

Boston

The Boston region has one of the most intelligently organized rapid transit systems in the nation. It reaches well beyond the Boston city limits and is financially supported by these outskirt municipalities. It knows the value of peripheral parking and endeavors to provide it.

(Continued on page 132)

(Continued from page 131)

However, it has one flaw. It is hard to enlarge as the region expands.

Boston is the chief city in New England and the largest state capital in the United States. It is rapidly changing to a predominantly commercial city, as many of the industries are moving out of the congested center city and large office developments such as Prudential Center and Government Center are replacing the industries.

The Boston standard metropolitan area is 836 square miles and embraces a population of about 2,500,000. The city, with about 800,000 people, represents only 32% of the metropolitan area's population.

Boston has some of the narrowest streets in the country.

It was the first city in North America to have a subway, the one under Tremont Street dating back to 1897. Early construction of subways became necessary because of the narrow downtown streets.

Of the 560,000 people who enter central Boston on a typical weekday, 43% enter by rapid transit or commuter railroad. During the rush hours when 140,000 people enter the central area, 70% enter by transit.

Boston's Metropolitan Transit Authority, created by the Massachusetts Legislature, took over the functions of the privately owned Boston Elevated Railway Company in 1947 as a result of financial problems of the company. The MTA has taxing powers and assesses each municipality under its jurisdiction for a proportionate share of the annual deficit. The following communities are served by the MTA:

CURRENT POPULATIONS

Boston	**801,000**	**Malden**	**60,000**
Arlington	**47,000**	**Medford**	**66,000**
Belmont	**29,000**	**Milton**	**22,000**
Brookline	**60,000**	**Newton**	**86,000**
Cambridge	**121,000**	**Revere**	**40,000**
Chelsea	**34,500**	**Somerville**	**102,000**
Everett	**46,000**	**Watertown**	**40,000**

These 14 municipalities represent only 60% of the metropolitan area as defined by the Census Bureau. Thus there is a large portion of the area which is not served by the MTA. This factor is perhaps the most serious drawback to the transit system. While by favorable referendum, the system can enter into more communities, there have been no takers because it is necessary to share in the deficit. The result has been an increasingly large deficit each year. In 1959, the MTA lost $18 million. Without being able to tap the newer communities, the system is hemmed in and serves many communities which are actually declining.

MTA has established a number of parking lots at many rapid transit stations, especially the terminals. These lots have reduced the number of automobiles entering downtown Boston, even though a 35-cent charge is made for parking. However, most of the parking lots are small and more space is needed.

In addition to MTA, three railroads provide commuter service in the Boston Area: the Boston & Maine to the north, the New York, New Haven & Hartford to the south; and the Boston & Albany to the west. Virtually all of the service is confined to rush hours. Because of the plight of the New England railroads in recent years, there has been a substantial reduction in service, including the complete elimination of certain branch lines.

From time to time it has been proposed that certain of these routes, especially those in the more densely populated suburbs, be taken over by the MTA and integrated into their system. Such integration has the advantage of providing much better distribution for passengers because the commuter roads generally have only one station in the downtown area. It would also permit transferring to other transit routes to reach destinations outside of downtown. If the commuter railroads continue to reduce their service, it seems reasonable to predict that eventually the MTA will take over most of their service. In fact, MTA did take over and integrate the "Highland" Branch Line of B & A in 1959. ◄◄

Parking Meter Nurses For New York

"Female parking meter attendants" sounds a little forbidding, but that is what Charles Murphy of New York's Department of Traffic called them when they were sworn in by no less than Mayor Robert F. Wagner on May 2, 1960, at City Hall.

The 20 were the first of 100 and the balance of the force started two weeks later.

All will be trained in law enforcement procedures and techniques, first aid, personal appearance, map reading and motor vehicle operation.

The first 20 women were senior parking meter attendants who, in addition to enforcement responsibilities, will each be in charge of four meter attendants. All will enforce parking regulations at the city's 52,000 curb metered spaces and 5,000 parking field spaces. They will wear uniforms of Air Force blue hat, jacket and skirt, navy scarf, white shirt and black shoes. Salaries of seniors are $3,750 a year and advance to $4,830; attendants start at $3,150 and go to $3,900. ◄◄

Mayor Robert F. Wagner (center) and Traffic Commissioner T. T. Wiley (at his right) greet newly appointed women meter attendents following the official swearing-in ceremonies at New York's City Hall as Anthony J. Stoeckert, director of parking meter enforcement (foreground), looks on. This force of 100 women will comprise the largest such group in the country.

GIVE YOUR MOTORISTS 50% MORE MANEUVERING SPACE WITH DUBL-DUALS

Rockwell Dubl-Dual parking meters insure a full *eight feet* to approach or leave a parking space. Other meter layouts allow only four feet for maneuvering and parking. Approach and exit are *safer* with the Dubl-Dual parking system, because traffic flow is smooth and fast. In one city, average parking time was reduced from 32 seconds to only 14 seconds. Parking time for women dropped from 37.4 seconds to only 15.9 seconds.

Dubl-Duals offer other key advantages . . . 23% lower initial cost, because two mechanisms are combined in one case; 50% lower installation costs, since only half as many meter stands are required; and lower maintenance costs, because two meters are checked at once.

For additional information on the complete line of Rockwell automatic and manual parking meters, write: Dual Parking Meter Company, Subsidiary of Rockwell Manufacturing Co., Pittsburgh 8, Pa.

AUTOMATIC

DUBL-DUAL

MANUAL

The only complete line
of automatic and manual parking meters

DUAL PARKING METERS
another fine product by
ROCKWELL

TRAFFIC CONTROL

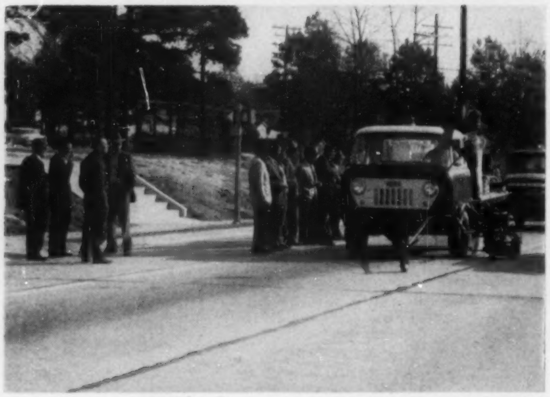
Charlotte's 600 Miles Of Stripes

With the annexation on January 1, of suburban sections which nearly double its area and add more than 60 miles of streets, the City of Charlotte, N. C., has a real marking chore now.

In 1950 only 9.1 miles of streets were marked. This increased to 67.4 miles in 1955; to 82.6 in 1956; to 93.6 miles in 1957 and 104.6 in 1958. Last year, in 1959, the city striped over 110 miles, and this year the miles of streets and roads to be striped will exceed 170 miles—or upwards of 600 miles of lines.

Before 1936, the city used paint brushes or a small hand spray gun. A small gravity feed sprayer was bought in 1936 and used until 1954 when it was replaced by a larger gravity feed unit. A Wald Model 12 was bought in 1957. And now the city has purchased a Town and County push button pavement marker. It will apply 80% of 1960's markings. The new machine can pick up its spray guns at the touch of a button, and travel at normal vehicle speeds. It also stripes at from 12 to 15 mph as compared with an average 4 mph of present equipment.

As the city uses yellow center lines and white lane lines, the striper carries two 30-gallon tanks containing white and yellow traffic paint, and a tank holding 500 pounds of glass spheres. The paint flows under pressure to high speed spray guns mounted on the left side of the unit, and the glass moves under pressure to dispensers mounted behind each gun. A built-in cleaning system cleans the spray guns after each use, flushing them with a solvent.



Putting down a double yellow centerline and white lane lines on Independence Boulevard with Charlotte's (and North Carolina's) first Wald Town and Country striping machine. The spectators are city officials and state highway department engineers.

A demonstration of the new unit was held shortly after its delivery in mid-December, with members of the city council, the city manager, and representatives of the State Highway Department and motor clubs in attendance.

Herman J. Hoose, *Director*
Traffic Engineering Department

Monrovia Provides Free Parking

Merchants and city officials especially recognize the need for off-street parking downtown. Who should do it? Finance it? Maintain it?

In 1955, Chamber of Commerce officials and city leaders in Monrovia, Calif. (population 27,600) looked for answers. A ten-member off-street parking committee was created by the Chamber of Commerce. The city manager attended the weekly meetings.

It was decided to proceed under a state act which permitted both property owners and the city government to share the cost of parking facilities. A master plan for off-street parking was prepared. When the four projects contemplated would be completed the entire downtown would be ringed with free public parking.

The boundary lines of the first of the four projects were defined to form an assessment district. This district encompassed three full blocks in the heart of downtown. Under the state law, property owners could assume costs only to the extent of 35% of the assessed valuation of land and improvements in the district. It was apparent from the start, that the estimated costs of the land to be taken in each project would exceed the amount that could be assessed against property owners. At this point the city was asked to share in the financing.

The idea was that free off-street parking would bring more shoppers downtown. The increase in business would bring direct financial benefits to the city government since there was a 1% city sales tax. The city council decided to utilize sales tax revenues, as the use of general property tax money for downtown parking lots would not be equitable to many property owners. The city allocated $50,000 annually from sales tax revenues to aid in the financing of off-street parking lots.

Enthusiasm

The result of the entire program hinged on the first project to a large degree. For, if the first one failed, it would be doubtful if any of the others would get off the ground. Enthusiasm ran high. The petition for this project contained the signatures of 86% of the area's property owners.

In November, 1958, the first public off-street parking lots were opened providing 322 free spaces for downtown shoppers. The Chamber of Commerce sponsored a gala opening. The merchants held a mammoth sale. Downtown Monrovia was aglow.

Three days later the members of the off-street parking committee were back in session on the second part of the program—Off-street Parking District Number 2. The petition for this second project was signed by 81% of the property owners who were to pay the bill.

All this is proof that business and government can work together and jointly finance off-street parking lots.

Gifford W. Miller
City Manager

Some Ideas

K+E

for your file of practical information on surveying . . . from

KEUFFEL & ESSER CO.

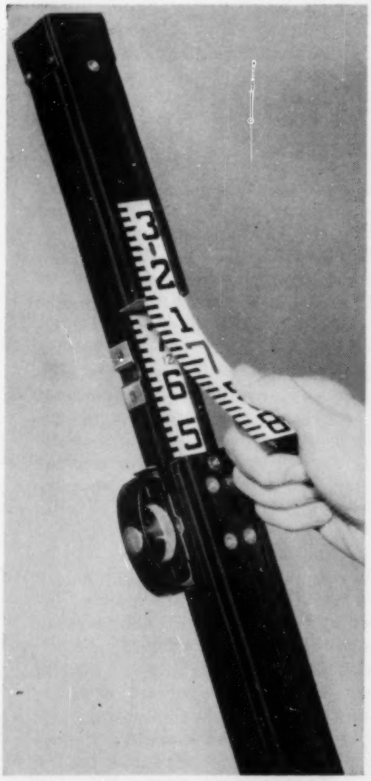
"For want of a nail . . . the battle was lost." This might well be the epitaph for many a tardy survey. The right surveying accessories can do wonders to speed a field party's operation . . . and the lack of same can cause delays in a hundred minor ways a day. How goes the tempo of your work lately? . . .

Does your flagging really flag?

This K&E flagging does everything but tie its own knot. Made of tough, embossed vinyl plastic, it's practically impervious to time and tempest. Unlike the "quick-to-quit" red cloth commonly pressed into flagging service, this plastic flagging resists wind ravel like the stake itself, remains supple even at – 35° F, tears quick and clean, has exceptionally high tensile strength, and takes both pencil and ball-point pen like paper. Available in five high-visibility colors (red, yellow, blue, orange and white), K&E Plastic Flagging (No. 6525) measures 1¼" in width and comes in handy 4" diameter, 300′ rolls. Great for gift wrapping and decorating, too!

You're only as good as your scales

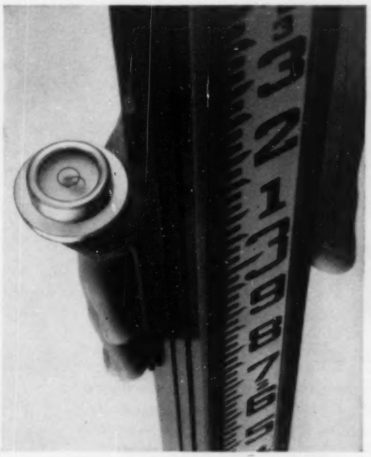
A complete line of hard-to-get items has long been a K&E specialty. Of particular interest here is K&E's comprehensive line of Leveling Rod Replacement Scales. Available for all K&E metal-face rods, these replacement scales are marked in the conventional pattern and design in feet, 10ths and 100ths. In addition, they feature "ready-reading" foot numbers in red between the 3rd, 4th, 6th and 7th tenths to facilitate reading on short shots when the main foot marks are likely to be outside the field of view.



If your off-the-rod readings seem to be a bit fuzzy lately, don't throw out an expensive rod, simply replace the face with an inexpensive *new scale*. It takes but a few minutes with a screwdriver and small hammer to install one of these nominally-priced replacements. And how about carrying a spare for emergencies?

Should a leveling rod be level?

The unassisted naked eye – despite its widespread popularity – is *not* the tool to guarantee a vertical leveling rod. A handy K&E device called a Rod Level (No. N6299) is the proper Rx here. It's a simple bubble unit on a long-angle contact arm that affixes to the edge of the leveling rod in semi-permanent fashion. When the bubble is centered, the rod is vertical . . . and no mistake about it! This inexpensive but accurate device eliminates guesswork, makes for truly *precise* readings, and works easily – no juggling act required, just a fairly steady hand.



Now, for carrying this equipment . . .

. . . may we suggest the handsome Surveyor's Leather Bag (No. 6540)? Here's a sturdy carry-all expressly made to withstand the rigors of field work. Heavy-duty stitched throughout, it has an adjustable shoulder strap with movable pressure-pad, rust-resistant brass hardware, separate pad and paper slot, roomy interior pocket, and a rich riding-boot finish in natural tan. Measuring 10" high by 12" across by 2½" wide, it affords plenty of room for field book, plumb bob, tacks, targets, pencils, keel, measuring tape, numerous rolls of plastic flagging, replacement scales, and a rod level . . . to say nothing of your lunch, a few trout flies, etc.

All these and other K&E time-savers are available from your local K&E Dealer . . . or you can send us the coupon below for further information.

KEUFFEL & ESSER CO., Dept. AC-7, Hoboken, N. J.

Please send me further information on:

☐ Plastic Flagging
☐ Rod Level
☐ Leveling Rod Replacement Scales
☐ Surveyor's Leather Bag

Name & Title______________________________

Company & Address______________________________

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Better Prices through Aggressive Purchasing

By **JOHN G. KRIEG**
City Purchasing Agent
Cincinnati, Ohio

Our sights were focused in 1959 on the reduction of administrative costs, paper work, better specifications, more competition. We feel that we have made appreciable strides in this direction without increasing our personnel complement and we intend to extend our efforts further into the coming year.

Going over our statistics, one might wonder why our personnel was so busy and rushed, consummating fewer purchase orders with a lesser expenditure by the city in 1959 than in 1958 (though the number of contracts increased over 8%). But with the expansion of operations in the city departments, a considerable additional workload was placed on our department to supply the additional materials and equipment needed. We have found that the best method of cutting down on paper work is through the medium of requirement contracts, under which the needs of many departments can be consolidated into fewer contracts, thereby eliminating repetitive purchase orders for the same types of items.

As examples of the items purchased under these combined requirement contracts, we entered into contracts for neoprene clothing, repairs to overhead cranes, electric fans, flashlight batteries, rental of construction equipment, tires and tubes, water purification and taste treatment chemicals, parts for Studebaker Lark passenger cars.

Not only did we have numerous requests for information on these requirement contracts from cities all over the United States and Canada but during the year we had a request from as far away as the City of Johannesburg, South Africa, inquiring as to our procedure in establishing some of our requirement contracts.

Another reference which is meaningless without further elaboration is the number of our standard city specifications which we developed. The figure now stands at 283. During the past year we drafted 28 new specifications and revised 90 old ones.

It took approximately six months' research to develop a satisfactory specification for the stadium paint which the Park Board and Recreation Commission used on park benches and stadium seats.

We in the municipal government wonder if Mr. Taxpayer ever fully realizes how he is affected by his city's operations. To tell him that we spent almost $9 million this year in furnishing the materials, equipment and services to the many city departments to perform their varied functions may not be very convincing. Let him ponder over a few of the things we did for him with his tax dollar.

While he was asleep, his safety was the concern of the police department. We bought the cars in which the police officers cruised his neighborhood; we bought their uniforms, revolvers, badges; equipped the police stations and made communication between cars and headquarters available in the

(Continued on page 139)

LONGER SIGHT...
SHORTER HEIGHT
No. 211
Only the NEW DIETZ

REVOLVING LIGHT gives you all these advantages

- Greater lens area—complete 360° visibility over greater distances
- Lower height—only 8¾ inches
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- Dome lens easy to remove—only necessary to remove one brass bolt
- Rust-proof chrome-plated brass base and lens rim mounts on thick rubber pad—conforms to contour of car roof
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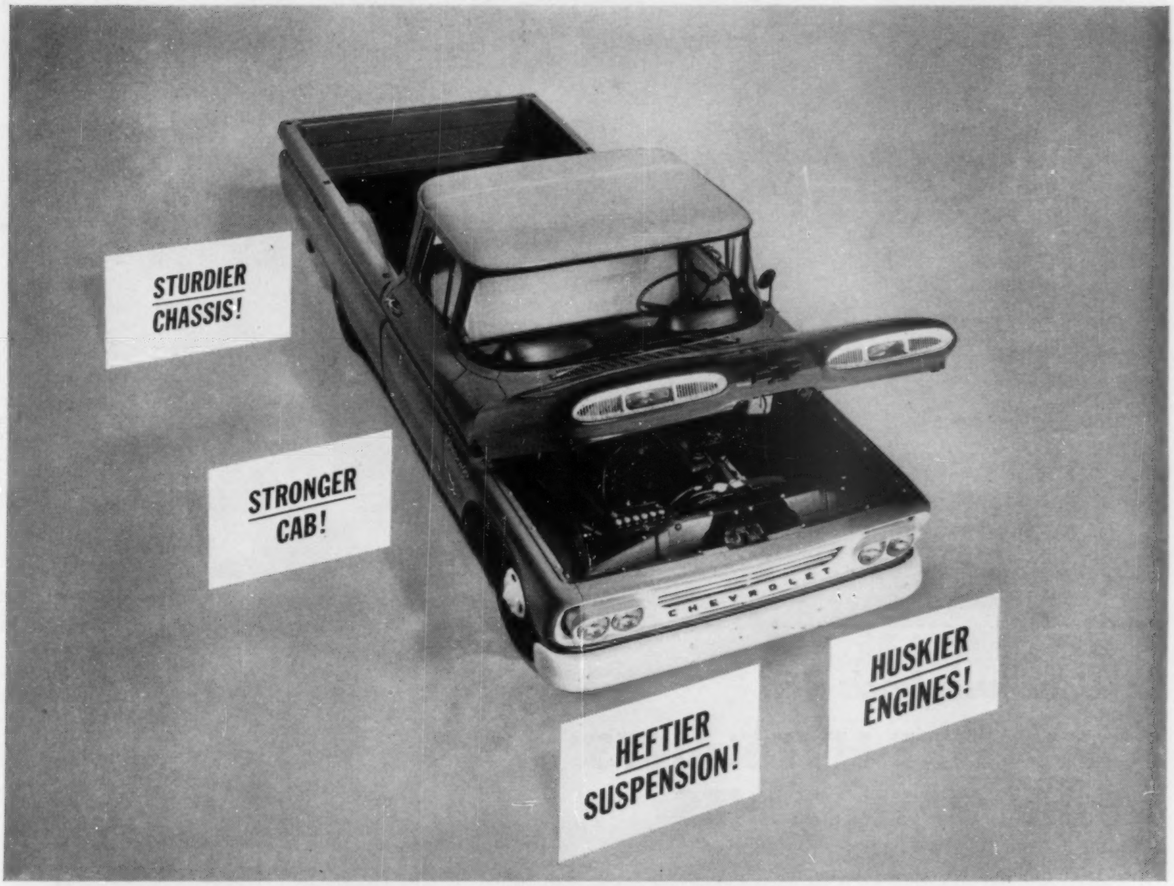


CHEVY'S PUT TOGETHER TO STAY TOGETHER ...TO CLAMP DOWN ON COSTS! Here are the strongest truck components known ...assembled lastingly, with care and craftsmanship. It's Chevy's way of making sure you get maximum truck life; extra assurance of higher profits because of far fewer maintenance and repair charges.

NEW STRONGER CAB CONSTRUCTION. New steel braces reinforce cab underbody, help keep cab tight and solid. Husky new box-section pillars frame door openings, keep doors in lasting alignment. New roof panel is double walled for extra strength.

NEW STURDIER CHASSIS COMPONENTS. New stronger *frames* with rigid box-section rail design increase torsional stiffness up to 1100%! And *brakes* are bigger for longer brake life and safer stopping. Bigger capacity *axles* and *suspensions* boost load-carrying ability.

TRUCK-BUILT V8's AND 6's. Components such as brawny forged steel crankshafts, long-lasting precision bearings and oil bath air cleaners provide sure dependability that keeps your maintenance costs *down*.

NEW HEFTIER SUSPENSION smooths the ride; protects everything from wear and tear. Independently suspended front wheels, rigid control arms and strong torsion bar springs take tough runs with strength to spare.

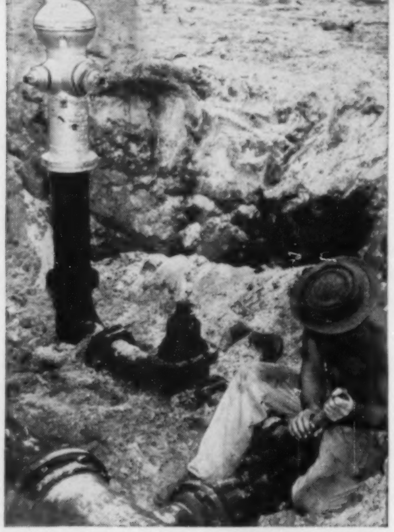
■ Chevrolet's building 'em *tough* these days, even tougher than ever before. And that's saying something when you consider how Chevrolet trucks have stood up over the years. Here's a typical example:

101,000 miles on a truck-busting job—and still going strong! The strength and stamina of this Chevy pickup has paid off handsomely for the Mitchell Insecticide Company, Inc., of Fairfax, S.C. In rugged service, hauling maximum loads of nitrogen throughout the southeastern states, this Chevy has logged 101,000 miles with no mechanical trouble at all.

That kind of performance has been Chevy's stock-in-trade for years; and the '60's are designed to put out even more of it. See your dealer for all the details. . . . Chevrolet Division of General Motors, Detroit 2, Mich.

1960 CHEVROLET STURDI-BILT TRUCKS CHEVROLET

Palm
Beach Lakes
in West
Palm Beach
Florida



One of hundreds of IOWA fire hydrants and gate valves being installed at Perini-Westward development within the city limits of West Palm Beach, Fla.

Uses hundreds of

IOWA FIRE HYDRANTS and GATE VALVES

IOWA Fire Hydrants and Gate Valves form an important part of the more than $4,000,000 investment in water and sewage facilities for a completely new "City Within a City", a Perini-Westward development, entirely within the city limits of West Palm Beach, Florida. One of the owners is Louis R. Perini, Chairman of the Board of the Milwaukee Braves and President of Perini Corporation.

The eye-catching central pavilion dominates a 12-acre exhibit in the nine-square-mile area where more than 40,000 people are expected to live. Hundreds of Iowa valves and hydrants were installed to control the flow of water and provide fire protection throughout the 100 miles of cast iron water mains serving this $450,000,000 development.

The IOWA products were selected because of their proved long life and easy maintenance... plus the assurance that parts and replacements will be always available. Such longtime future service is an important part of every purchase of IOWA products.

Let us send you details on IOWA'S *complete line of valves and hydrants*

IOWA
Valves
Fire Hydrants
Accessories
IOWA VALVE COMPANY

IOWA VALVE COMPANY

Oskaloosa, Iowa

A subsidiary of James B. Clow & Sons, Inc.

(Continued from page 136)

event of a burglary or any other police emergency.

If, during the night, a fire broke out in Mr. Taxpayer's house or business, the fire department was ready to reach his home before serious damage was done. We bought two new fire pumping engines and hose apparatus at a cost to the city of $43,549. His insurance rate was one of the lowest in the country because of the high safety rating which his fire department earned for him; it earned that rating not only with its fine personnel training but with the quality of its equipment and its operating supplies. Among other things, we bought 12,000 feet of fire hose at a cost of $19,800.

Water Treatment

When Mr. Taxpayer drank a glass of water in the morning he did not have to worry whether it was safe, because we bought $565,163 worth of chemicals, including soda ash, liquid chlorine, quick lime, ground filter alum, ferric sulphate coagulant, liquid anhydrous ammonia, activated carbon and liquid ferric chloride, used by the department of Water Works and the Division of Sewage Disposal to make sure water was free of impurities.

As Mr. Taxpayer drove to work and stopped at a traffic light he probably did not think about the many lights throughout the city or of the fact that in one lot we purchased 172 luminaires and transformers that cost $17,639.

If he parked, dropping a nickel in the parking meter, it might have been one of the 2,000 new meters purchased at a cost of $94,530 and on which we realized a cash discount of $1,890.60 for the prompt payment of the bill.

As Mr. Taxpayer drove on to work he probably didn't even consider that the painted white and yellow lines alone used 8,500 gallons of paint and 10,000 gallons of binder which we bought at a price of $37,390.

He may have been indifferent to these facts and figures but he still wanted his garbage picked up and this was made possible by the packer-type closed garbage trucks and the Dempster Dumpster trucks we bought.

This year we purchased 89 pas-

(Continued on page 140)

INCINERATION
WITH
Air Pollution Control

MORSE BOULGER INC.
BUILDERS OF THE MOST MODERN INCINERATOR PLANTS IN THE WORLD

MORSE BOULGER OUR 70th YEAR KERNER KERNERATOR

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Contact us, or have your architect or consulting engineer tap our 70 years experience solving Waste Disposal problems—large or small. No obligation.

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75hp
for boating's toughest jobs

The Evinrude **Starflite II**! Mighty power for a wide range of waterfront duties and commercial boating jobs. Smooth, quiet, tireless performer. Its V-4, 89 cu. in. engine develops 75 hp at 4500 rpm. You get outboarding's finest features: electric starting, automatic choke, sea-going magneto ignition, rugged Jetstream Drive, two-way shock absorbers. **Lowest cost per hp in history!**

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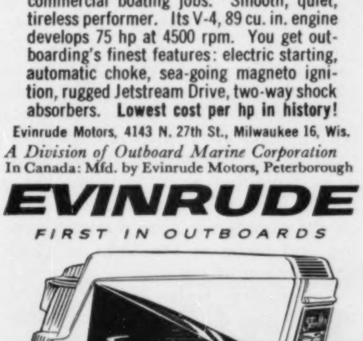
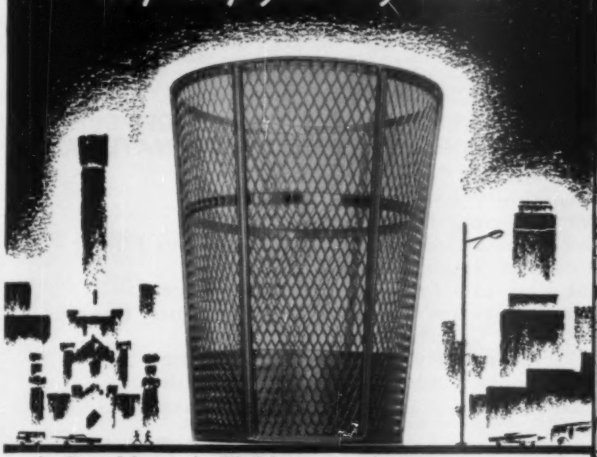
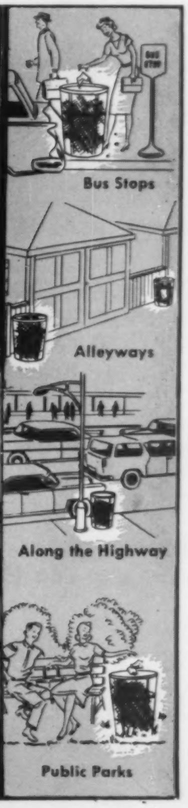
EVINRUDE
FIRST IN OUTBOARDS



DEMCOR E-X-P-A-N-D-E-D METAL
LITTER BASKETS
Help keep your city CLEAN





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(Continued from page 139)

senger cars and 74 trucks and truck bodies at a total cost of $390,301.

Because of the limited budget for automotive equipment and the loss of certain factory discounts formerly allowed governmental agencies and to a manufacturer's direct price increase, this year we modified our specifications to permit bids on the compact cars for certain uses. Before soliciting bids we tried out, on a demonstration basis, several compact cars to determine whether they would fulfill the space requirements as well as the performance requirements of the various city services. These demonstration cars were assigned to a number of city divisions, including the Division of Police (for use in the varied activities of the department except patrol or beat service).

The study indicated that a possible 50% or more increase in mileage per gallon would be received over the mileage of the standard sized vehicles purchased. On this basis we bought 40 of the compact cars.

We refer equal bids to the U. S. Federal Trade Commission and/or the Department of Justice, to investigate possible collusion or restraint of trade. We never stop our quest for competitive bids and we have resorted to every legal means to discourage and eliminate equal price quotations.

Tie Prices

In an effort to defeat this tie-pricing practice, we have tried several methods. One was to award the contract to only one bidder by drawing lots instead of dividing the business and another was to set up the contract on a two-year basis instead of one, thereby causing the unsuccessful bidder to lose the opportunity of participating in the city's business for two years instead of one. These initial efforts were abortive but we hope to see better results in future lettings. ◄◄

More Mercury Light For the Money

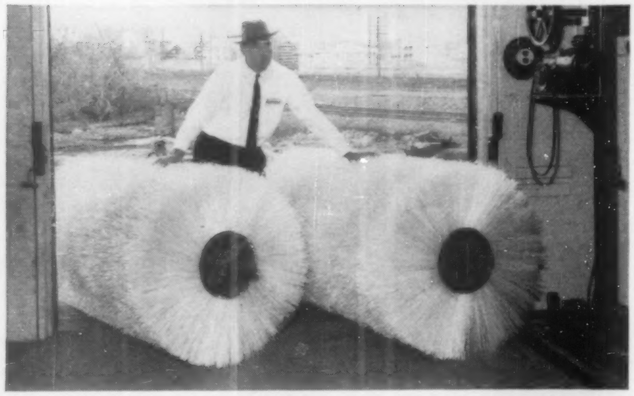
An arc tube, containing an electrode which drastically reduces the blackening of the arc tube during the life of the lamp, will now be used in 175, 250, 400, 425, 700 and 1000-watt Westinghouse mercury lamps. According to Gordon W. Howson, Westinghouse lamp division large-lamp-marketing manager, the new "Lifeguard" arc tube provides the customer with up to 20% additional light throughout the life of the lamp. Lamps with the new construction have a rating of over 40% longer useful life.

Mr. Howson says it is the greatest advance in mercury vapor lamps since the introduction of thorium electrodes in 1941. Most present-day electrodes use thorium to prevent rapid vaporization of the tungsten coil. The electrode in the "Lifeguard" arc tube employs a new chemical formula. The material is embedded inside the electrode, completely shielded from the electric arc discharge. In this way it is protected from erosion. As a result, far less material is deposited on the quartz arc tube during burning and more of the light is available for use.

Laboratory tests at the end of 10,000 hours of use showed that 400-watt mercury lamps using the new arc tubes still produced 85% of their initial lumens. Lamps using the older type had lost almost 40% of their initial light output. ◄◄

OUTSTANDING RESULTS WITH WHITING'S Prostran

POLYPROPYLENE



John Kiley, President of Atlantic Broom Company, Readville, Mass., with two new Prostran brooms, fresh off the production line. Note the full body and uniformity of the brooms, with bristles set close together, and so stiff that they easily support the weight of the heavy broom core without sagging.

PROSTRAN-POLYPROPYLENE OFFERS ADVANTAGES SUPERIOR TO ANY NATURAL OR SYNTHETIC BROOM MATERIAL!

- Reduced Cost Per Sweeping Mile
- Longer Lasting Use-Life
- Excellent Sweeping Efficiency
- Minimum "Down-Time" For Repeated Broom Filling
- Toughness and Superior Abrasive Action
- Excellent Flex-Life for Ideal Bend Recovery
- Excellent Resistance To Chemicals, Solvents, Greases, Oils and Many Common Acids
- Heavy Duty Efficiency And Clean Sweeping
- Top Performance Under All Weather Conditions

Distributed In New England States by Atlantic Broom Co., Readville, Mass.
Or Contact Us For Nearest Distribution Point To You

PHONE
Burlington, Vt. UNiversity 4-7414

* Prostran is made with Pro-Fax† — polypropylene.

†Reg. P.M. Hercules Powder Co.

E.B. & A.C.
WHITING
COMPANY
Burlington, Vermont

USCOLITE PLASTIC PIPE

*Commonwealth of Virginia, Hampton Roads Sanitation District Commission Treatment Plant at Foot of 44th St., Norfolk, Va.

Uscolite pipe solves an external corrosion problem for sanitation district

The Uscolite® pipe line installed in this treatment plant* carries 150 gallons a minute of a saturated chlorine water solution (actually treated sewage water) from the chlorinator to the main sewage line entering the plant.

Prior to installation of Uscolite, pipe severely corroded externally due to the chemical content of the soil and electrolytic action. *Uscolite has eliminated the costly maintenance and constant replacement of pipe.* Uscolite pipe was installed above and below ground because it is rigid enough to resist soil pressure, yet flexible enough to follow earth contours. UscoWeld† Fittings were installed in a fourth the usual time, saving many dollars. The welds are as strong and permanent as the pipe itself. Clamp-type fittings that leak, pull off and impair flow are never needed. *Not one foot of Uscolite Pipe has ever failed in service, when used in accordance with our recommendations.*

USCOLITE ELIMINATES COSTLY PIPE INSTALLATION

Superintendent of this plant says: "The simplest 'big' piping job we ever performed. Four men laid 1000 feet of 6" pipe per day without a sweat."

• • •

When you think of plastic pipe, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial plastic products.

†Patent applied for

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Company, Ltd.

Municipal
Public
Relations

The City Tells Its Story

Edited by **PAN DODD EIMON**

There Is New Power In City Annual Reports

THE MOST EFFECTIVE CITY REPORT

. . . is timely in content, design and date of issue. The earliest possible date after the close of the city's fiscal year is the best publication date.

. . . is dynamic. Selling a city theme, idea, or project helps make it that way.

. . . is educational. It must carry basic information in a clear, concise form, useful to the citizen and his family.

. . . is a key part of—but not all of—the city's public relations activity. The good report supplements other informational activity; it is not expected to do the whole job alone.

Municipal officials, now in general agreement that the annual report is a document basic to good city-citizen relations, have shown considerable ingenuity this year in creating reports that do something more than review the past. This implies recognition that the report is a working tool of municipal management, that it can and does serve well-conceived municipal goals, that it is an effective selling medium.

So, the 1960 report is fresh, vital, important. A review of publications from four cities—West Palm Beach, Fla., University City, Mo., Des Moines, Iowa, and Kingsport, Tenn. —illustrates these new qualities:

1. **specific city proposals are presented and pushed,**
2. **citizens are given the "how" and "who" of city operations,**
3. **organization and financial charts are sharpened, and**
4. **more permanent report formats are used; the report becomes a reference text on city government.**

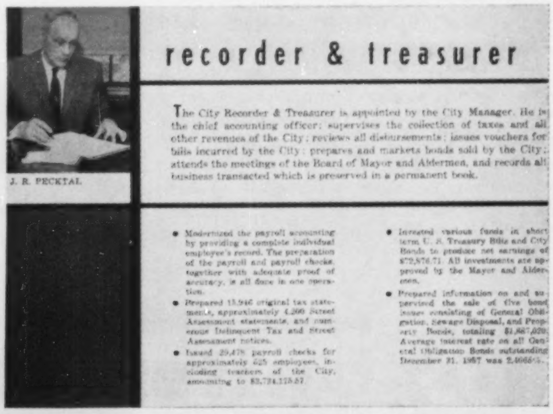
University City urged a "yes" vote for its urban renewal program on the green-and-white cover and in the transmittal letter of its report. The urban renewal referendum took place on April 5 and was approved three to one by more than 8,000 voters. Last year, the same proposal failed with less than 4,000 persons even bothering to cast a ballot. While Finance Director Victor A. Ellman indicates that there were several PR factors at work for the 1960 referendum, the impact of the report was great.

The letter, signed by the city council, told citizens: "Your council urges you to support action on urban renewal now by a vote of 'Yes.' University City has been a robust, growing community (1950 population—39,892; 1959 population—58,000). It also has been an aging community in certain areas. In

(Continued on page 144)

URBAN RENEWAL *and MUNICIPAL SERVICES*

The city council of University City used the annual report to make a frank appeal for urban renewal.



recorder & treasurer

The City Recorder & Treasurer is appointed by the City Manager. He is the chief accounting officer; supervises the collection of taxes and all other revenues of the City; reviews all disbursements; issues vouchers for bills incurred by the City; prepares and markets bonds sold by the City; attends the meetings of the Board of Mayor and Aldermen, and records all business transacted which is preserved in a permanent book.

- Modernized the payroll accounting by providing a complete individual employee's record. The preparation of the payroll and payroll checks, together with adequate proof of accuracy, is all done in one operation.
- Prepared 13,946 original tax statements, approximately 4,200 Street Assessment statements, and numerous Delinquent Tax and Street Assessment notices.
- Issued 29,478 payroll checks for approximately 625 employees, including teachers of the City, amounting to $3,724,123.57.
- Invested various funds in short term U. S. Treasury Bills and City Bonds to produce net earnings of $72,876.71. All investments are approved by the Mayor and Aldermen.
- Prepared information on and supervised the sale of five bond issues consisting of General Obligation, Sewage Disposal, and Property Bonds, totaling $1,887,020. Average interest rate on all General Obligation Bonds outstanding December 31, 1957 was 2.4066%.

Key city officials get short, but thorough, introductions in the Kingsport, Tenn., biennial reports.

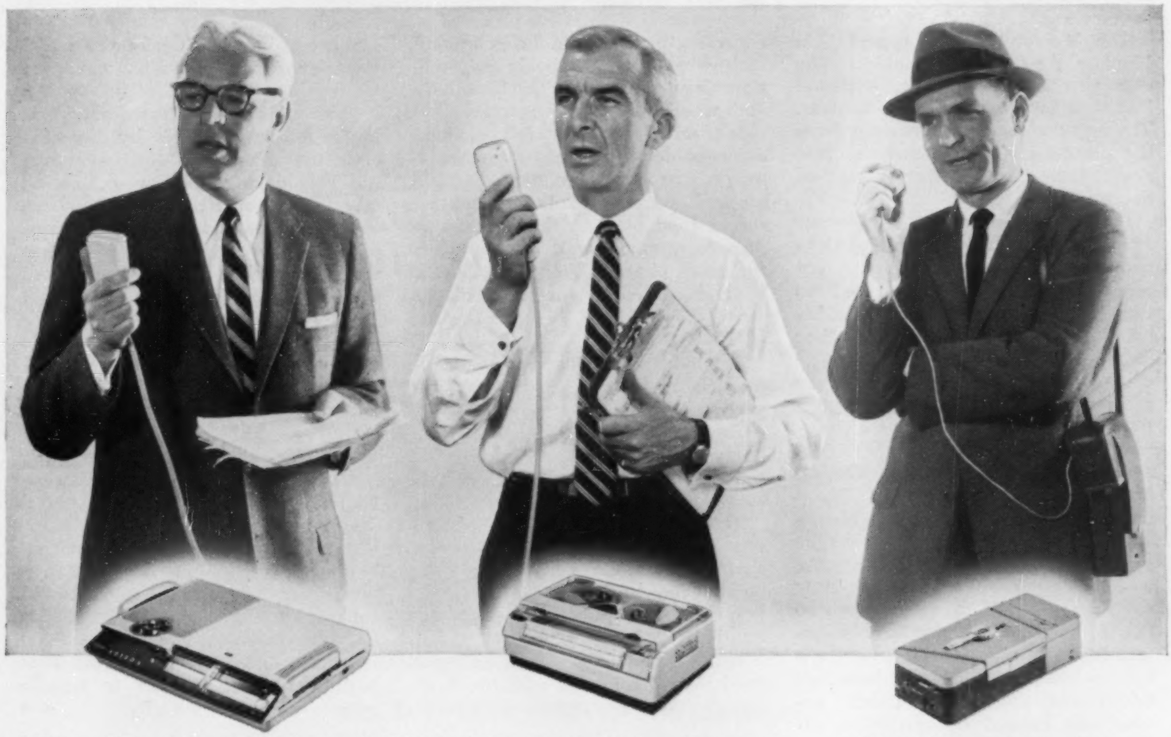
Plain talk about machine dictation:

"How can we justify the purchase of dictating machines?"

If a $7,500-a-year man dictates only 5 letters a day, Edison Voicewriter's best models, for him and his secretary, will pay for themselves in just under 14 months!* And not only does this put your organization dollars—and hours—ahead on paperwork each day, but best of all, it gives your people more time to think, more time—and the means—to easily get all their good ideas down on paper.

Check the full Edison line—backed by the most respected name in the industry, and by the nationwide Edison Voicewriter service organization—for the Edison system that will give *your* organization tangible profits and greater efficiency.

*Figures are substantiated by thousands of Edison correspondence surveys.



"With my Edison Voicewriter, I get correspondence out twice as fast . . ."

Busy officials and "volume" correspondents agree the full-featured Voicewriter helps get all written work down on paper faster. It's like an extra right hand. And it's always available, too . . . even for dictating after hours, at home or in the car.

"With my Edison Envoy, I talk away my work . . . on magnetic tape at a very low cost!"

New Edison Envoy is a magnetic tape dictating machine for heavy duty use. Ideal for recording interviews . . . telephone conversations . . . dictating correspondence, reports, memos. Enables *anyone* to enjoy the savings and convenience of machine dictation on a modest budget.

"With Midgetape, I get all the facts right . . . on the first try!"

The battery-operated portable Midgetape weighs only 3 lbs. Records on tape anywhere. Ideal for verbal note-taking (on inspection tours, for example) . . . beats longhand note-taking by a *mile*—for speed, convenience, accuracy and completeness!

Get the full story—Mail coupon today for further details on Voicewriter dictating systems, and how they'll meet your own special needs.

Edison Voicewriter

A product of Thomas A. Edison Industries,
McGraw-Edison Company, West Orange, N.J.
In Canada: 32 Front Street W., Toronto, Ont.

McGRAW EDISON

To: Edison Voicewriter (AC-7), West Orange, New Jersey
I want the whole story on Edison Voicewriter systems . . . and how they can help me in my department. I'm interested in ☐ Voicewriter; ☐ Envoy; ☐ Midgetape.

Name__________ Title__________

Department__________

Street__________

City__________ Zone_____ State________

(Continued from page 142)

1955-56, the total assessed valuation of real estate was $89,708,220. By 1958-59, despite much new construction, it was $85,807,808.

"To halt this overall downward trend in private property values or to recreate private property values are the vital objectives of urban renewal programs. Both your public schools and your municipal services depend on this same property tax base for their support. A favorable vote . . . is a necessary first step toward enabling your city to help itself, to help the public schools, and to help every property owner in University City."

The University City report is a 16-page, 11x8½-inch booklet. The cost was 14.3c per copy, a nickel less than last year's similar booklet. The city used some engravings from the previous year and cut the 1960 report from 20 to 16 pages to effect the savings.

Des Moines promotes a six-year (1961-1966 inclusive) capital improvement program via its current report. One page is devoted to two "wheels of progress," one labeled "essential projects," the other "highly desirable projects." The projects and a cost estimate are shown on the spokes of the respective wheels. The city gives citizen-readers this nutshell explanation of the program: "What it is: Capital improvement programming is a method of accomplishing the acquisition and development of public property and facilities in harmony with the comprehensive plan. How we do it: obtain a comprehensive list of projects, assign priorities, determine revenue policies, prepare a capital budget, hold public hearings, adopt and appropriate funds, revise and extend the program annually."

The theme of the Des Moines booklet is the tenth anniversary of council-manager government and major activities in that period are capsuled inside the front cover. The city organization chart (see illustration) is well-presented. So is a "Civic Calendar" which lists city boards and commissions, tells when and where each meets. A telephone directory shows citizens where to call for information on 35 matters, from ambulance service to zoning.

West Palm Beach has issued past reports in newspaper form but, according to Manager James J. Mott, this year it wanted "something in more permanent form." So the slick paper format was adopted and printing costs were held to 17.2c per copy. City firemen distributed the report in house-to-house calls made annually for spring clean-up and fire prevention. The current need in West Palm Beach is for a million-dollar storm drainage program and was presented in the report as part of a proposed capital improvement program.

The storm drainage project is the subject, too, of a special cartoon-and-plain-talk brochure prepared by the city. High school students did much of the work on the brochure and Manager Mott comments: "We are quite pleased with the talent exhibited in drafting, cartooning, and narration."

Kingsport, with a long record of reporting bienially, includes in each and every report specific information about what top city officials do, and what they are responsible for, along with a photograph of each office-holder. Kingsport departments are concisely described. A streamlined organization chart, set up in type only, without boxes or drawings, might well set a pattern for such charts. Financial data is well presented by means of charts.

Printing

Printed booklets have a longer life than the more transitory newspaper, personal letter, or mimeographed review. Good paper, sharp printing, lively photographs, art, and layout contribute to the "let's keep it" reaction these several reports inspire.

In all four cities whose reports are mentioned, officials recognize that the annual report, alone, can't be expected to do the total information-education-public-relations job for the city.

University City, for example, used many media, in addition to its report, to call out favorable votes for urban renewal. They included:

Speakers bureau, mobilized by the Chamber of Commerce and the city to address all civic groups.

Resolutions, solicited and obtained from civic groups.

Picture series, assembled by the city to show the "impending state of blight" in some sections, were carried by local and nearby St. Louis newspapers.

Public service radio programs.

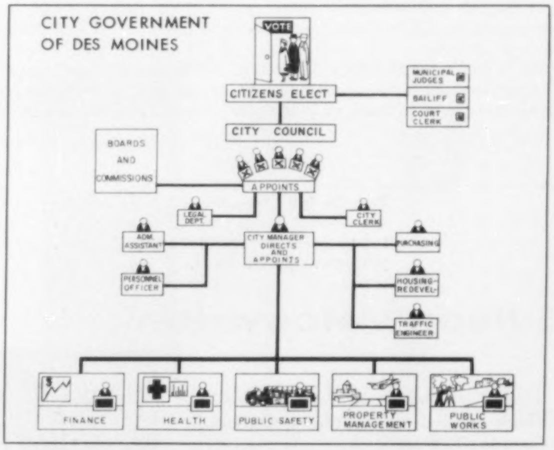
Forty billboards, located at strategic points in the city.

Informational pamphlets, prepared by the Chamber of Commerce and distributed by the city and the Chamber.

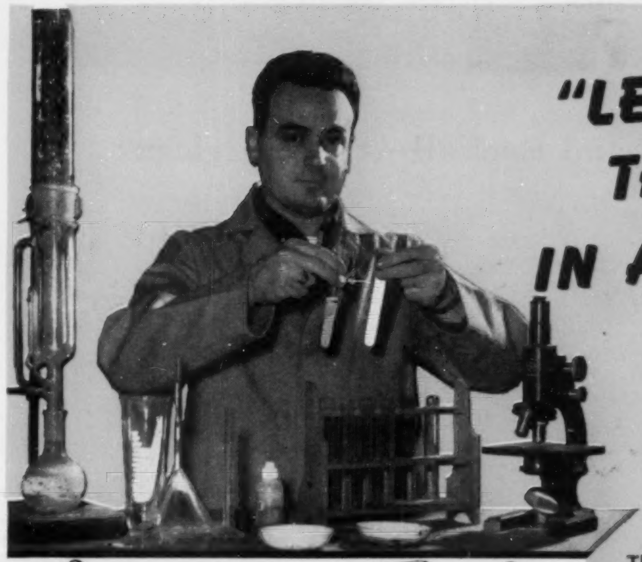
West Palm Beach gets the usual newspaper and broadcast coverage of local government. The special brochure, already mentioned, is looked on so favorably by city officials that Manager Mott says they are considering another explaining city finances in citizen terms. While the city has no public relations office, the manager says, "I feel that we need such a section and it will receive further study in our budget considerations this summer."

Kingsport relies heavily on two local newspapers and local broadcasting facilities which provide unusually thorough coverage of city activities. The city regularly releases fact-filled stories to the news media. These deal both with current news and provide background data for reporters.

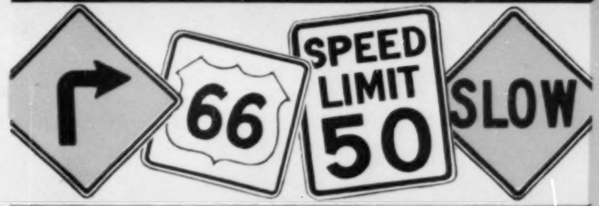
Des Moines' PR tools, in addition to its report, include frequent appearances before civic, social, and religious groups by Manager Elder Gunter. Important to good citizen relations, too, is the Service Bureau, set up last year to handle complaints systematically. ◄◄

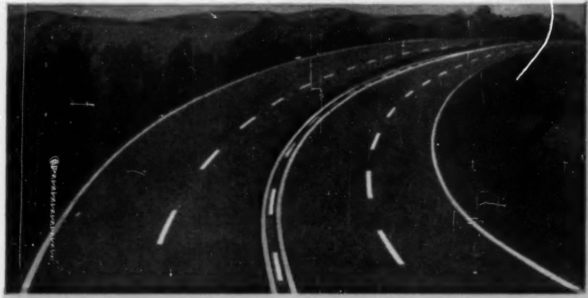


Des Moines shows the relationship between the city manager and the other city officials and departments.



"LET ME SHOW YOU THE DIFFERENCE IN A TRULY WHITE, LEAD-FREE REFLECTIVE BEAD"





There is a marked difference in reflective bead quality, determined largely by degree of whiteness and lead-free quality. On these two important factors depends the brilliance, reflectivity and ultimate performance of the product. To meet Flex-O-Lite's rigid quality standards, only the *whitest white, lead-free* beads can pass inspection. Add to this, technological advances, long experience and manufacturing know-how and you have the reasons why highway signs and markers, reflectorized with Flex-O-Lite beads, literally leap out of the darkness to contribute greater safety for the motoring public . . . greater satisfaction and economy for you. Write for new brochure today.

FLEX-O-LITE PRODUCTS

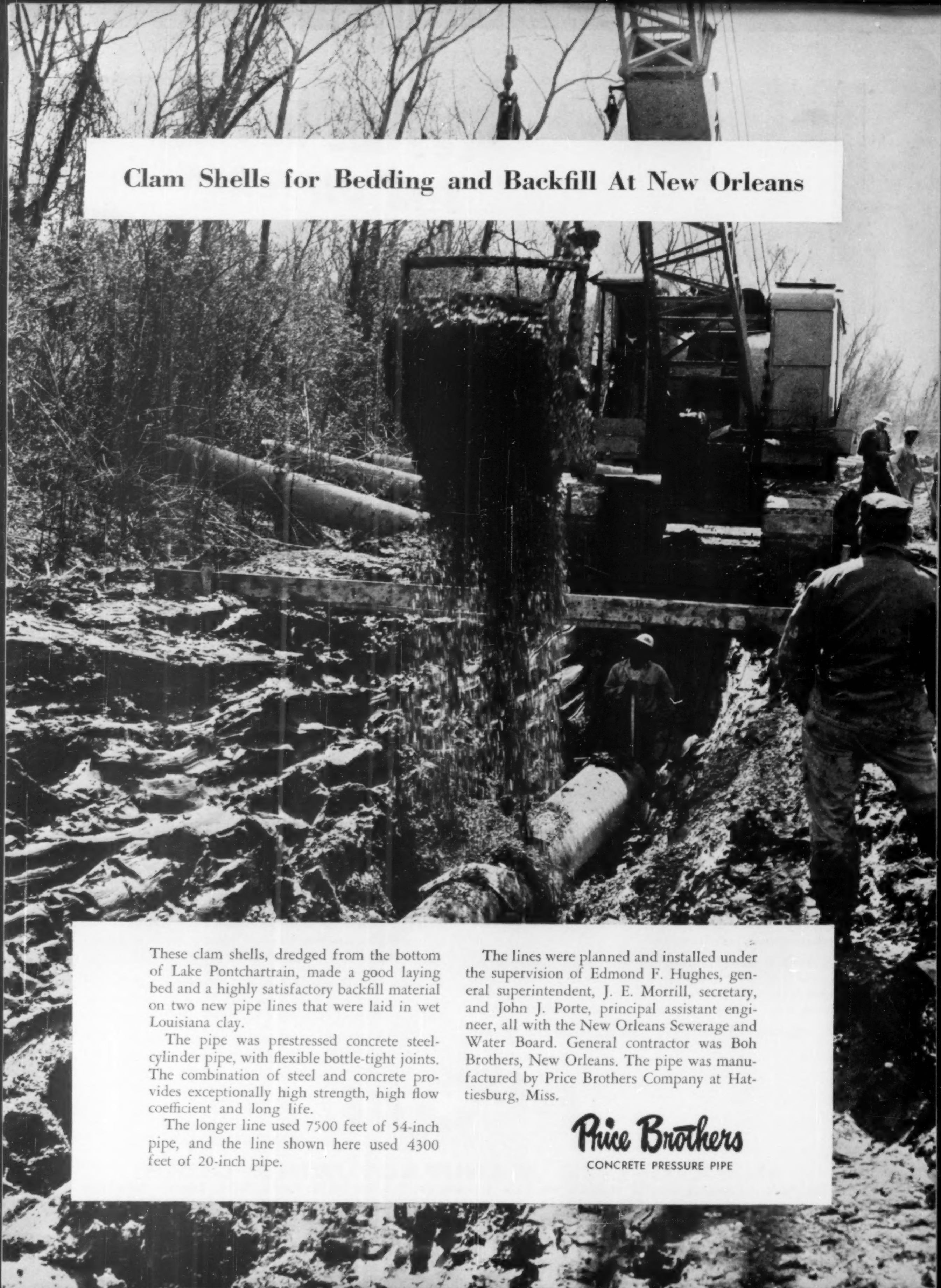
1. **No. 831 LEAD-FREE** High Index of Refraction Beads and Sign Kits. Best for white and yellow signs.
2. **UB 68 LEAD-FREE** Medium Index of Refraction Beads and Sign Kits. For application to signs in the darker pigment colors—greens, reds, blues, etc.
3. **TYPE H SAFETY SPHERES**—For danger points such as guard rails, curbs, bridge abutments, medians, hydrants and other hazardous areas where ultra-high brilliance is required. Many times brighter than paint or ordinary reflectorization.
4. **TRAFFIC BEADS**—Free Flowing, Moisture-Proof and Standard Beads. Tops in eye-catching brilliance and dependable reflectorization on highway center lines and edge line markings.
5. **ALL-WEATHER AIRPORT RUNWAY BEADS**—500 to 1,000% brighter than standard beads at angles of descent ranging from 10 to 30%.
6. **FLEX-O-LITE ALSO MAKES:** New Positive Free-Flowing Traffic and Sign Bead Dispensers. The economical answer to the problem of reflective glass bead application. Details on request.

FLEX LITE

FLEX-O-LITE MANUFACTURING CORP.

8301 Flex-O-Lite Drive, St. Louis 23, Missouri • Flex-O-Lite of Canada, Ltd., P. O. Box 216, St. Thomas, Ontario, Canada • Paris, Texas

MAKERS OF DROP-ON, FREE-FLOWING, STANDARD, MILITARY, MOISTURE-PROOF, HIGH AND MEDIUM INDEX SIGN BEADS



Clam Shells for Bedding and Backfill At New Orleans

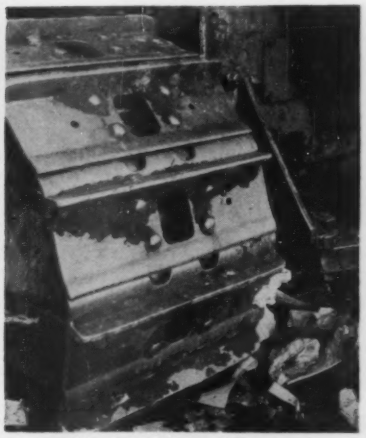
These clam shells, dredged from the bottom of Lake Pontchartrain, made a good laying bed and a highly satisfactory backfill material on two new pipe lines that were laid in wet Louisiana clay.

The pipe was prestressed concrete steel-cylinder pipe, with flexible bottle-tight joints. The combination of steel and concrete provides exceptionally high strength, high flow coefficient and long life.

The longer line used 7500 feet of 54-inch pipe, and the line shown here used 4300 feet of 20-inch pipe.

The lines were planned and installed under the supervision of Edmond F. Hughes, general superintendent, J. E. Morrill, secretary, and John J. Porte, principal assistant engineer, all with the New Orleans Sewerage and Water Board. General contractor was Boh Brothers, New Orleans. The pipe was manufactured by Price Brothers Company at Hattiesburg, Miss.

Price Brothers
CONCRETE PRESSURE PIPE



Rubbish, picked up by the track, used to compact and wedge into the sprocket teeth recesses between the track bushings, resulting in periodic shutdowns; now that holes (close-up at right) have been cut into the center of the track, the teeth force the rubbish through holes as fast as it collects.

Holes — A Simple Remedy for a Big Headache

A series of holes solved a big maintenance headache for the heavy equipment department of the transportation division of California's Orange County. The problem: compaction of trash, primarily papers and wire, in the sprocket openings between track bushings on the crawler tractors used at the county's sanitary landfills. The solution: four-inch square holes burned into the center of the track pads.

Heavy equipment foreman G. H. Arnold first tried smaller holes of various shapes, but with little success. The four-inch holes are the largest that can be safely burned into the pads of the International TD 18 and Caterpillar D7 tractors. The edges are beveled to prevent refuse from wedging into the holes. In the two years that the county has been operating 18 disposal-area tractors with the perforated pads, only five pads have been broken.

Trash compaction would sometimes take less than a week to shut down a tractor. It accelerated wear on the sprockets and put undue strain on track bushings. At times the rubbish wedged into the track chain so securely that the tractor couldn't move. Now that holes have been cut in the pads, the sprocket teeth force rubbish through the holes as fast as it collects between the track bushings.

Both Arnold and the tractor operators point out that the equipment is used exclusively in refuse-disposal areas, not on hard rocky ground. ◄◄

In Santa Cruz, Weed Burning Pays

The Department of Streets and Sewers, Santa Cruz, Calif., has developed a weed-burning program that keeps street and field drainage ways clear at a substantial savings in time and manpower.

Clearing drainage ways by hand labor was slow and expensive. Ground sterilizers were found to leave too little residual effect in frequently flowing ditches. Contact sprays showed quick results, but they left a mass of dry weeds that became a drain-clogging problem.

It was not until they adopted weed burning and developed their own burning outfit that they reported an effective job of controlling growth in their particular area.

They started with a 250-gallon propane gas tank trailer supplied by a local gas company, and attached 250 feet of gas hose with a burner end. Working pressure was 200 psi.

They then installed a trailer-mounted John Bean Sprayer—equipped with an agitator and pump powered by a Briggs & Stratton, 4-cycle engine—on an International flat-bed truck. This unit provides fire protection during burning.

With the unit, the department crew can burn approximately seven miles of drainage ways with a fuel expenditure of only $145.

It has been found that a quick pass over weed-grown area has a searing effect, killing the growth, and a second pass two weeks later does the actual incineration, leaving only a negligible residue of ashes that will be flushed away by the natural flow in the ditch.

Santa Cruz does most of its weed burning with a 2-man crew, but during summer months supplements the working force with two college men on vacation. ◄◄

One of three No. 12 Motor Graders bought by Dallas County on "best bid" basis.

Why Dallas County, Texas, chose

3 CAT No. 12 Motor Graders on "Best Bid"

After studying the cost of equipment, officials of Dallas County, Texas, recently approved the purchase of 3 new Caterpillar No. 12 Motor Graders. The reasoning was simple, according to the Dallas *Times-Herald:*

"Comparative figures from the county auditor indicated the new Caterpillar No. 12 Motor Graders, as opposed to other makes of machines, would have the lowest last cost. Assuming the machines would operate a total of 16,000 hours over an expected 8-year life, the *cost of repairs* for each Cat Motor Grader was estimated to be $3,264; Brand B, $15,073; and Brand C, $16,864."

In addition, according to previous cost records, a 1956 model No. 12 had been operated by the county for 2,524 hours without repair to the clutch. Total repair costs for the machine had been less than a dime an hour.

In short, cost records proved Caterpillar offered the county the lowest "best bid" dollar for dollar.

More and more public and governmental officials, like those in Dallas County, have discovered that the "best bid" method of machinery purchasing—actually lowest total cost—points to Caterpillar. Here's why: greater dependability, lower repair costs, better performance, and higher trade-in value for every piece of Cat-built equipment.

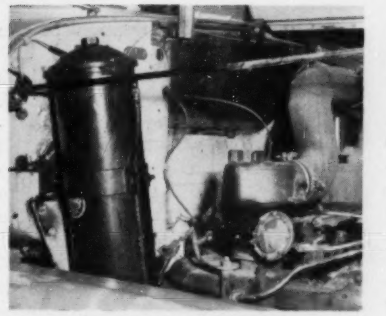
Get the full story from your local Caterpillar Dealer. Let him prove by actual demonstration how Caterpillar can save taxpayers' money in your community.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BUY LOW TOTAL COST—
BUY CAT MOTOR GRADERS



This large filter is used on all trucks 2½ tons and over in size.

Author Jenkins (left) and mechanic Dean Payne install a fuller's earth element on one of the city vehicles.

A Field-Tested Lubrication Program

. . . proves its worth in oil changes alone; side benefits provide an extra bonus

By **LYLE D. JENKINS**
Superintendent of
Equipment
San Fernando, Calif.

What appeared to be the excessive cost of maintaining city automotive equipment started us on a truly money-saving lubrication program. Back in 1956 an analysis of vehicle maintenance records indicated that we should be able to eliminate much of this cost if we could find a more efficient method of engine lubrication.

Our principal problems consisted of bearing failure due to fatigue; sticking valves and valve lifters; camshaft bearing seizures and cam lobe wear; excessive amounts of sludge; short spark plug life and the need for constant and frequent change of oil. These problems were more evident in vehicles customarily driven at slow speeds and left a great amount of time idling.

3-Year Experiment

Thus we undertook a three-year experimental program that resulted in savings of more than 50% in oil changes alone during a 75,000-mile test period.

The experimental program consisted of using various combinations of brand name oil filters and oil marketed by major oil companies. Filters and oils were rotated in order to obtain all possible combinations.

Tests of Used Oil

As the first step in our fact-finding program, we submitted a typical sample of used oil for laboratory analysis. The sample was a heavy-duty SAE 20 oil after 1,500 miles of normal service with filtration through a standard brand filter element. The analysis was as follows:

Viscosity SUS @ 210°	**58.6***
Ash content	**0.40%**
Precipitation Number	**3.00**
Neutralization Number	**.39**
Kissling Resins	**.39**

*** Viscosity before use was 52 SUS.**

The laboratory report closed with the statement: "It is apparent from the laboratory analysis that this oil has become contaminated and rendered unfit for further service."

(Continued on page 150)

Savings through the use of large fuller's earth oil filters is especially noticeable on police cars and trucks such as these refuse collection units that run at low speeds much of the time.

(Continued from page 149)

This report indicated that either the oil or the filter, or both, could meet the demands of our fleet operation. During the first stage of experimentation, we used different major brands of oil, (including straight mineral oil) reduced the test mileage to 1,000 miles and used various brands of filter elements. Each brand of oil was used with each of four different makes of filter. The result was a more efficient combination than we had been using initially but the laboratory reports were still not completely satisfactory.

In our search for a better answer, we found a company that was using a fuller's earth type of filter on very large, precision hydraulic equipment with close valve tolerances. This company had entirely eliminated valve chatter by using this process. We had some reservations about the use of fuller's earth because of the possibility that the container might weaken and allow the filter material to contaminate the oil but this fear was resolved upon our first examination of the filter.

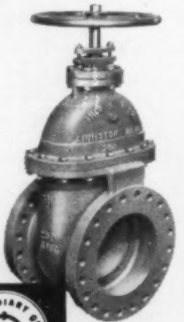
We purchased several fuller's earth filter elements and started on another series of tests. The procedure followed was methodical and thorough in an effort to investigate every aspect of the problem. The results were encouraging from the very first test. At the end of the first 1,000 miles, the filter element and oil were changed. A laboratory analysis of the used oil produced a better report than that of any sample we had previously submitted.

The lab report on the second 1,000-mile sample was better than that of the first. Each succeeding 1,000-mile sample proved to be of higher quality than its predecessor. The fifth such sample had a clean appearance and was well within acceptable limits when tested. This comment was appended to the fifth report: "The only objectionable feature was the high dissolved resins content." We then realized that we had not only been keeping the new oil clean but had also been "flushing" out the engine and collecting in the filter element residual deposits which had been accumulating in the engine over a long period of time.

Since we were at last able to remove the acids, gums, varnish, solids, and similar materials, then the process of holding them in suspension by use of a detergent oil seemed unnecessary. We reasoned that with a clean engine, a straight

With the large filters oil is never changed, merely checked for the proper level, as senior mechanic William Clemow is doing here.

(Continued on page 152)



Horsepower

Substitution of mechanical horsepower for human muscle-power, is largely responsible for the amazing expansion of the U. S. economy until it leads the world with the highest standard of living. Economists call it the American industrial revolution.

M & H is truly a product of the American industrial revolution. The Company's real growth and development started in 1932, when M & H was reorganized and joined the mechanical horsepower movement. About that time the electric motor was being introduced as a source of industrial power. Realizing this trend, M & H Management redesigned its products and modernized its production equipment.

Slow, tedious, hand-operated manufacturing processes were discarded. Sand equipment, cranes, machine tools, every M & H wheel was soon being turned by electric power.

Rapidly the Company's volume of sales and production began to grow. With the years, it gathered momentum because the M & H plant modernization kept up with new developments and never stopped. The Company's annual sales volume now makes it one of the most successful valve and hydrant producers in the country—thoroughly equipped to provide highest quality products for water works improvements.

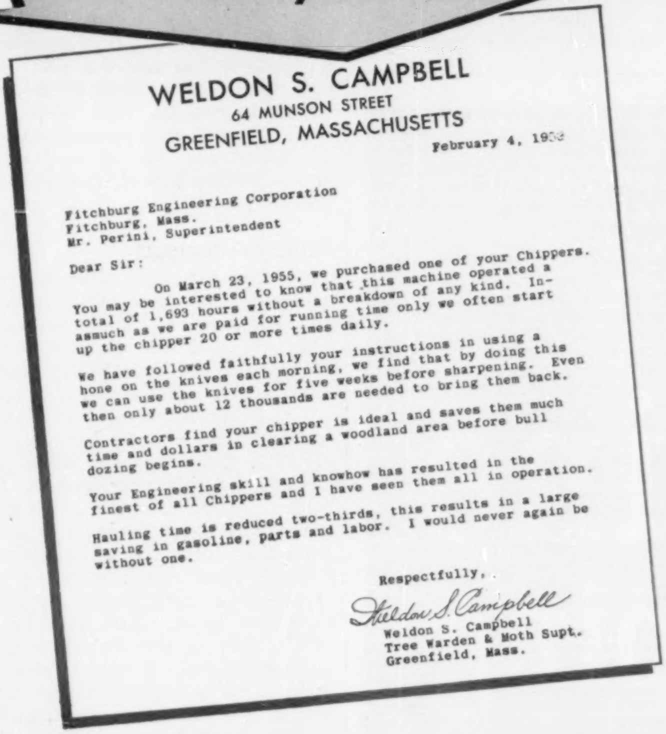
(No. 2 of a Series)

M&H VALVE
AND FITTINGS COMPANY
ANNISTON, ALABAMA

SUBSIDIARY OF WALWORTH

FITCHBURG CHIPPER

"OPERATES 1693 HOURS without a breakdown of any kind!"



WELDON S. CAMPBELL
64 MUNSON STREET
GREENFIELD, MASSACHUSETTS

February 4, 1958

Fitchburg Engineering Corporation
Fitchburg, Mass.
Mr. Perini, Superintendent

Dear Sir:

On March 23, 1955, we purchased one of your Chippers. You may be interested to know that this machine operated a total of 1,693 hours without a breakdown of any kind. Inasmuch as we are paid for running time only we often start up the chipper 20 or more times daily.

We have followed faithfully your instructions in using a hone on the knives each morning, we find that by doing this we can use the knives for five weeks before sharpening. Even then only about 12 thousands are needed to bring them back.

Contractors find your chipper is ideal and saves them much time and dollars in clearing a woodland area before bull dozing begins.

Your Engineering skill and knowhow has resulted in the finest of all Chippers and I have seen them all in operation.

Hauling time is reduced two-thirds, this results in a large saving in gasoline, parts and labor. I would never again be without one.

Respectfully,

Weldon S. Campbell

Weldon S. Campbell
Tree Warden & Moth Supt.
Greenfield, Mass.

Fitchburg Wood Chippers are engineered to stand hard use, to give long service without excessive maintenance costs.

That's the "reason why" successful men like Weldon Campbell prefer Fitchburg for the tough brush removal jobs.

Fitchburg Chippers are designed by engineers for busy, trouble-free service. The exclusive spring-activated feed plate adjusts itself automatically—provides protection from damaging foreign material—assures smooth, efficient operation. The power take-off clutch gives safe starts and stops. There's no fly wheel to cause bearing trouble. These features keep a Fitchburg Chipper on the job . . . save you time and money.

Read (at right) what others say about their Fitchburg Wood Chippers, and send for your free copy of "Chip Dollars" today.

FITCHBURG ENGINEERING CORPORATION FITCHBURG, MASS.

"Our Fitchburg Chipper has been inexpensive to maintain and trouble-free in operation, and has meant a great saving to us in time and labor."
—F. A. Canuso & Sons, Inc.
Philadelphia, Pennsylvania

"During about 2,000 operating hours we have suffered neither employee accident due to chipper operation, nor major mechanical failure."
—Northern Tree Company, Inc.
Petoskey, Michigan

"The Fitchburg Chipper is well constructed. The machine is trouble-free and easily maintained."
—John Glasgow, Supt. of P. W.
Township of Mahwah, New Jersey

NEW! FREE!

Book of Facts

Detailed cutaway drawings of Fitchburg Chipper in color. Specifications, diagrams, charts, plus money-saving reports and experiences of others.

FITCHBURG CHIPPERS
Chip Dollars
from your overhead
FITCHBURG ENGINEERING CORPORATION

FITCHBURG ENGINEERING CORPORATION
Fitchburg, Mass., Dept. AC-67
Send Free Copy of "Chip Dollars from Your Overhead."

Name..
Position..
Company..
City or Town.......................State.........

(Continued from page 150)

mineral oil, with nothing but an oxidation inhibitor and a pour depressor added, should be able to do the job. The very property which makes a highly detergent oil valuable, i.e., its ability to pick up and hold a considerable amount of impurities in suspension until the oil is drained and they are eliminated, can also be somewhat of a hazard. The continued circulation of these waste products through the moving parts of an engine, rather than filtering them out as soon as they are produced, is undoubtedly responsible for unnecessary wear on engine parts and a significant portion of the overall cost of engine maintenance.

"Proof" Stage

Believing that we had found an effective filter, we next entered the "proof" stage of the program. Filters with nearly four times the volume of fuller's earth of those used initially were purchased and installed. These larger filters cost only slightly more than the smaller size but obviously have a great deal more efficiency. Using this larger filter and a straight mineral oil, we found our lab reports so uniformly favorable that we discontinued changing oil entirely and adopted a practice of changing only the filter element and using the oil over and over again. We discovered, however, that the time of changing the filter element must be faithfully observed. If the vehicle is permitted to use the filter too long, the acid content of the oil builds up rapidly. This allows the engine to become contaminated and the oil is not free of acid again until after the second filter element change.

Policy Adopted

We now operate under a fixed policy. A straight mineral oil, with an inhibitor and pour depressor added, is used and never changed. We use a 4x6-inch fuller's earth filter, which is changed every 2,000 miles. Using this combination, ash content in oil samples has dropped to .03%. One very noticeable advantage of this new system has been an improvement in spark plug life. We have been able to realize more than three times the effective mileage from spark plugs—30,000 miles—since instituting the present filtration system. This is partially attributable to the fact that there is no metal soap present in straight mineral oil to deposit on the electrodes and in part to the filtration process itself because two of the principal carbon-forming by-products, gum and water, are removed at the filter.

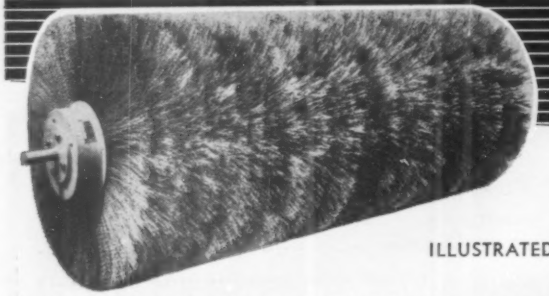
Police cars, due to their long periods of idling at the scene of an accident, extended runs at fairly slow cruising speeds, with only occasional spurts of hard driving, had long been our chief engine maintenance problem. However, the higher efficiency of the filtration process described above has reduced this problem to reasonable proportions. Patrol cars now in service all have in excess of 75,000 engine miles. Acceleration, top speed, gas mileage and oil consumption have shown no appreciable change and they appear to operate with the same efficiency they did at 20,000 miles. Engine maintenance has been limited to two spark plug changes and two sets of breaker points.

A recent laboratory analysis of

(Continued on page 155)

LEADERSHIP
PROVED
THROUGH
PERFORMANCE

Danline
sweeping
brushes



NEWARK

WRITE FOR
ILLUSTRATED BROCHURE

5924

NEWARK BRUSH COMPANY
260 MICHIGAN AVE., KENILWORTH, N. J.

Now . . . a 14′ digger at a 12′ price!

DIGGING • LIFTING
HANDLE WITH CASE
Utility
LOADING • CARRYING
CASE

New CASE® 530 *Utility* BACKHOE-LOADER speeds public works without budget increase

Why sacrifice production with limited-duty diggers and undersize loaders, when the *same budget will get you a fleet of J. I. Case 530 14′ backhoes and rugged 2000-lb. loader rigs?* New Case Model 530 saves over $1500 compared to other 14′ diggers . . . gives you faster trenching and loading, *plus* extra ruggedness and durability.

Case 530 drives anywhere up to 18 mph . . . cuts trenches 14′ deep . . . digs 16′9″ from pivot . . . loads any size truck . . . swings 180° with foot-pedal hydraulic control for fast cycling. Its 2000-lb. front-end loader applies 3700-lb. breakaway, dumps with over 9′ clearance for fast dump-and-go. It's a husky machine with highest quality features, including stress-engineered *alloy-steel* backhoe boom, dipper stick and buckets, *plus* power steering, shuttle transmission, 14.9-24 tires.

Complete new line for '60

Other Case time- and money-savers for municipalities: *Model 430* 1000- or 1200-lb. Loader with optional 10′ backhoe, mowers; *Model 310D* Crawler Tractor with 3500-lb. loader, angling dozer, bulldozer, 14′ backhoe. Full line of quick-change attachments for all tractors.

Equipment appropriation not needed

Even if your budget contains no money for equipment, you can get a new Case machine on long-term lease . . . convertible to full ownership. Lease payment amounts to as little as 3⅓% of sale value per month. Or you can purchase on low-interest installment terms.

See a free demonstration of the machine of your choice and get special financing details from your Case Dealer. Send coupon for literature.

CASE®

J. I. CASE CO., RACINE, WIS.

J. I. CASE CO., Dept. G1560, Racine, Wis.

Send details on *Utility* machines:

Wheel tractor with ☐ 14′ Backhoe ☐ 2000-lb. Loader ☐ 10′ Backhoe ☐ 1200-lb. Loader

Crawler tractor with ☐ 14′ Backhoe ☐ 3500-lb. Loader ☐ Bulldozer ☐ Angling Dozer

Name . . . .

Address . . . .

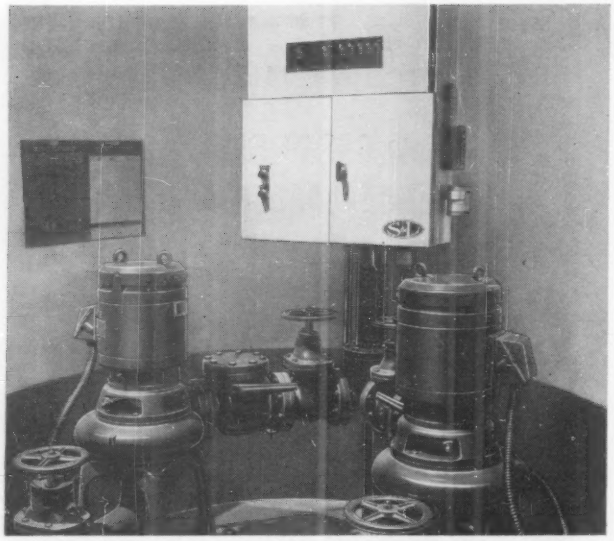
Employed by . . . .

City . . . . State . . . .

CU-BL-186

Smith & Loveless
VERTICAL CLOSE-COUPLED
"Non-Clog"
SEWAGE PUMPS

Built to the most exacting requirements by the world's largest manufacturer of factory-built sewage lift stations.



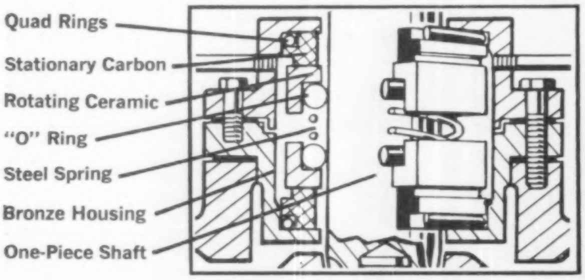
"BUILT FOR THE SMITH & LOVELESS PUMP STATION TO MAKE OUR PUMP STATION BETTER BUILT."

The One Pump Designed to Meet All the "Must" Requirements for Sewage Service

The Smith & Loveless "Non-Clog" sewage pump is the result of years of experience with over 1,400 varied pump station installations.

Ultimate in design and construction, the "Non-Clog" pump is precision manufactured of superior materials—with over-size shaft and bearings. Special attention is given to corrosion and abrasion resistance and ease of maintenance. Maximum pump efficiencies with ability to handle 3" solids.

Designed with close tolerances: shaft runout held to .003", shaft end play held to .010" and vibration movement to .005".



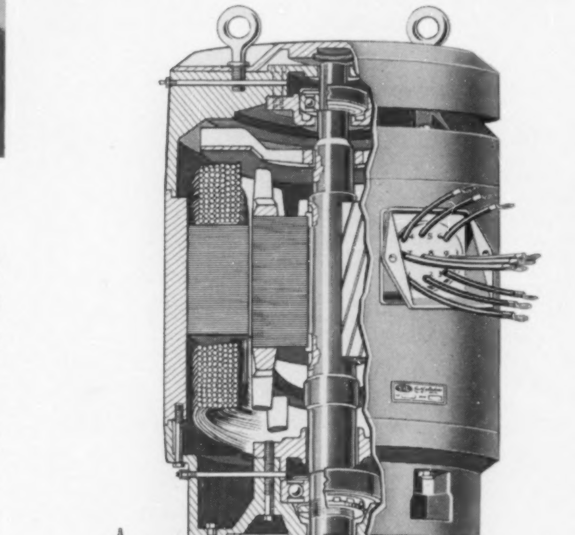
The Advantages of the Mechanical Seal...

Smith & Loveless experience in the sewage lift station field has proved the merits of "dead tight" mechanical seals. The double mechanical seal system in the Smith & Loveless "Non-Clog" sewage pump is the most satisfactory way to prevent sewage, noxious and dangerous gases from entering the pump room.

The mating surfaces of the long-wearing carbon and diamond-hard ceramics are lapped to a flatness tolerance of one light band to insure a liquid and gas-tight seal.

For further information, write for new Bulletin 500-A

Address: Department 10.



A superior pump for a superior pump station.

(2465)

S&L *Smith & Loveless*

DIVISION-UNION TANK CAR COMPANY
P. O. BOX 8884
KANSAS CITY 15, MISSOURI
Plant: Lenexa, Kansas

(Continued from page 152)

the oil from one of these vehicles, after 75,000 miles of use, showed:

Oil SAE 30, paraffin base, straight mineral

Viscosity SUS @ 210°	**56.7**
Ash Content	**.03%**
Precipitation Number	**Trace**
Dilution	**2.0%**
Neutralization Number	**.067**
Water	**None**
Kissling Resins	**None**

Note: The viscosity is off approximately 2 seconds from new oil. All other readings are within tolerance for new oil.

Comparative costs between the method presently used as opposed to that previously employed demonstrate that the immediate savings in oil changes alone made the experimentation worthwhile. There will, of course, be even greater savings in the long run because of the "maintenance" value of the fuller's earth system. The immediate savings during the 75,000-mile test period can easily be seen by the following comparison:

Former Method

Filter and oil changed at 1,000 miles and assuming no oil added between changes:

75 filter elements @ $2.00	**$150**
375 qts. oil (crankcase) @ .25	**93.75**
75 qts. oil (filter) @ .25	**18.75**
	$261.55

Present Method

Filter changed at 2,000 miles and assuming no oil added between changes:

38 filter elements @ $2.75	**$104.50**
76 qts. oil (filter) @ .25	**19**
	$123.50

The gross saving is approximately 50% and the net saving well over 75% because the number of oil changes has been cut in half and valuable mechanic time and vehicle inactivity have been reduced in like proportion.

Fuller's earth filtration may not be the perfect solution to engine wear, but it is by far the best answer we have found. Our tests were thorough, though space does not permit the listing of all the details. We have not mentioned the company or manufacturers' names of the filter elements or oils tested. This information is available upon request to persons having the responsibility of maintaining and supervising fleet operations. ◄◄

Dial Any Miami City-County Office

"Direct In-Dialing" will enable the caller to dial directly to any City of Miami or Dade County department without going through a city switchboard.

"Cape Canaveral, five or six Strategic Air Command bases and Time-Life International are the known operations using the system," Ben Demby, Superintendent of the Division of Communications for the City of Miami said. "The City of Philadelphia has ordered it, but it will take almost two years before its system is completed. We've been working with Southern Bell for over two years to get it."

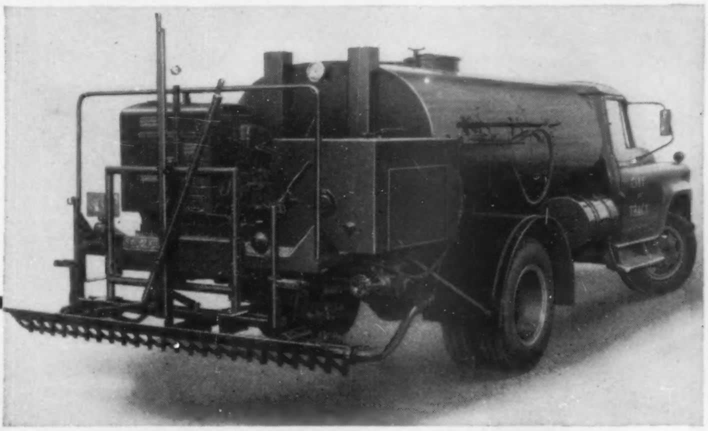
To make a call now, it's necessary to dial the city or county number, then ask the operator for the desired extension. If a caller wants the county manager, for example, he must dial FR 7-1911, then ask for extension 5311. Under the new system, the caller simply will dial FR 7-5311. ◄◄

Standard Steel Model 658

Road-a-Mite

combines both

ECONOMY and PERFORMANCE



A Mighty Road-Builder with TODAY'S COMPACT CAR DESIGN!

On the working end of the Model 658 is a newly designed 12′ full-circulating spray bar. Turn-up ends provide for additional sections up to 24′ in length. Mechanical lateral shift and hydraulic vertical adjustment are standard.

The Model 658 provides the small community with equipment at a small investment so that they can more easily protect a larger investment in roads and streets. This compact new unit also provides the small city or beginning contractor with adequate means for blacktop construction work. The Model 658 provides low-cost secondary support to operators of the bigger pressure distributors.

Built to the Highest Standard

OTHER PRODUCTS OF STANDARD STEEL
ASPHALT DISTRIBUTORS . . . BURNERS . . POWER AND TRACTION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS SHELVING HARDWARE . . PIPE LINE EQUIPMENT . . SUPPLY TANKS AND AGRICULTURAL EQUIPMENT

658-1 Standard Steel Works, Inc. NORTH KANSAS CITY, MO

Water Rates Rising
Still Too Low

. . . however water meters demonstrate their value in reducing waste permanently

While water rates are on the upgrade, they still are too low to support this vital service in a manner that it deserves. This is the result of study by Dr. Harris F. Seidel, Superintendent of Water and Sewage, Ames, Iowa.

Dr. Seidel based much of his study on an analysis of the water rate series that ran in THE AMERICAN CITY from January 1959 to March 1960. From this, he noted that of the 127 water works reporting:

- **just over half have raised rates wthin the last five years**
- **over 80% have done so since 1951, some several times**
- **half of all rate increases were from 20% to 35%**
- **less than 10% reported boosts of from 50% to 75%**

Little Effect

From a previous analysis of water-works operating data in 1948 and 1953, these two conclusions were drawn:

- **that water use has increased almost universally, regardless of rate changes.**
- **that water use may not have risen as sharply where unusually stiff rate increases have occurred.**

The analysis of THE AMERICAN CITY rate study, in general, supports these conclusions. Of the water works commenting on this relationship, only about 20% reported that their increases had been accompanied by slight reductions in water use. The balance reported that use was not affected. Surprisingly, the amount of the rate increase apparently had no relation to the reduction in water use.

These factors prompted Dr. Seidel to conclude that water rates are still low enough and habits of water use sufficiently stable to consign the rate factor to a distinctly minor role in water demand.

Meters Eliminate Waste

His studies confirm that the use of water meters has an important bearing on the elimination of costly waste in water distribution. His statistical work supports the rule-of-thumb that a transition from a non-metered to fully metered status will reduce the demand as much as 50%. It also confirms that this is not just a temporary reaction; the demand will remain stable at the reduced level, confirming that the

(Continued on page 159)

SEWERS
cleaned faster
and easier!

BUCKET MACHINES
TRUCK LOADERS AVAILABLE

SEWERKING "800"

SEWERKING "350"

SEWERKING "250"

O'Brien sewerking®

–a type to solve your sewer cleaning needs

Whatever your problem come to O'BRIEN for the right, all-power, equipment! Here you will find cable-type rodders, bucket machines, and sectional rod equipment; all designed to *save manpower, work better, and last far longer.* Really trouble-free sewer cleaners that have reduced costs 50%-75% for many cities! Also, a constant factory stock of tools, cutters, solid rods, and cable, to make O'BRIEN your best bet for service!

POWER ROD DRIVE
Trailer Available

CITY .... STATE ....
STREET . ...
NAME ....

Call or write—
RОdney 3-7433

O'Brien
MANUFACTURING CORPORATION
DEPT. PB 760 5632 NORTHWEST HIGHWAY, CHICAGO 46, ILLINOIS

To be perfectly truthful, our product (LARGE-DIAMETER STEEL WATER PIPE) is really quite good

We make electric fusion-weld steel pipe in sizes from 18 in. ID to the largest you could possibly use. We've made it (and cities like yours have *used* it) since before the turn of the century. After sixty-plus years of experience, we are convinced that steel is the best material for moving large volumes of water.

Is steel pipe as good as we claim? Well, let's consider Six Good Reasons For Using Steel Pipe.

1. Internal Strength. No other material matches steel's ability to withstand high pressures, water hammer, shock loadings, surge. This is *proven* strength—every single length of large-diameter steel pipe is hydrostatically tested in the shop to AWWA standards.

2. Beam Strength. The structural strength of tubular steel is unquestioned. Some diameters can span as much as 120 ft without supports. This quality enables steel pipe to span washouts, or to be installed above ground with fewer supports than other materials.

3. Elasticity. Steel "gives" under loads that would crack rigid materials. It can withstand the pounding of heavy traffic, the shock of nearby explosions, even earthquakes.

4. Leakproof Joints. A welded line is absolutely bottle-tight. And if coupled or gasketed joints are used, the allowable leakage runs only a fraction of what's needed for concrete pipe.

5. Corrosion-Resistant. Modern, coal-tar-enamel lining and coating materials give unexcelled protection against corrosion and incrustation. You just can't get higher flow capacity than in a tar-enameled steel main.

6. 40-Ft Lengths. The longer lengths mean fewer joints—only 132 a mile. Steel pipe is easy to handle, too, weighing only about one-fifth as much a foot as concrete pipe.

These are the facts. And they're all good reasons why you should consider large-diameter steel pipe for your next water main. We'd be happy to discuss the matter with you. Just contact the Bethlehem sales office nearest you.

Steel
For strength
...economy
...versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

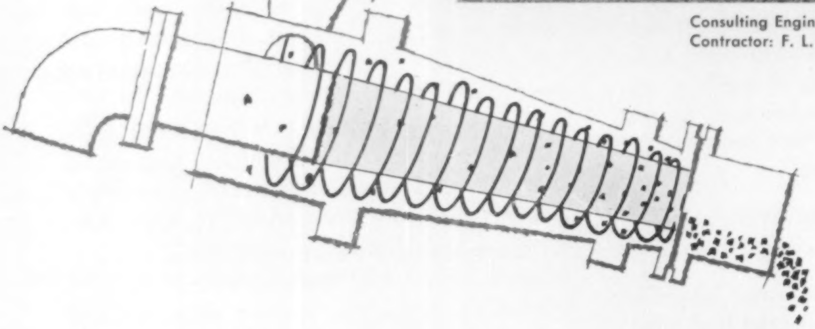
BETHLEHEM STEEL

BETHLEHEM STEEL

DorrClone® Degritting

pays off at High Point, N.C. Treatment Plant

Consulting Engineer: Wm. F. Freeman Inc., High Point, N. C.
Contractor: F. L. Showalter, Inc., Lynchburg, Va.



Operating in combination with a 16′ dia. Dorr Detritor®, a 12″ dia. DorrClone washes 190 gpm of grit from the collecting tank underflow at North Carolina's High Point Sewage Treatment Plant. DorrClone degritting reduces subsequent treatment loads, improves overall efficiency.

The DorrClone is a simple, highly efficient device that operates without moving parts. Centrifugal force separates the grit as the feed swirls round a conical chamber. The grit is thrown against the walls and discharged at the apex valve at the lower end of the cone. The lighter sewage and sludge, together with most of the liquid, flows out the overflow pipe.

Applications include degritting of raw sewage prior to primary sedimentation, washing of Detritor Collecting Tank underflow and degritting of primary clarifier underflow prior to Densludge Thickening. For more information, write to Dorr-Oliver Incorporated, Stamford, Conn.

DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

(Continued from page 156)

reduction represents the elimination of waste, rather than any decrease in water use.

Dr. Seidel noted with discouragement that a number of water rates still have blocks that charge less than 5½c for 1,000 gallons. The economics of such a charge, he notes, drily, would be interesting to behold.

He also criticizes the water industry for priding itself that "Water is cheaper than dirt." Water, he points out, is not cheap. It is priceless.

Dr. Seidel's observations result from a discussion of water supply economics prepared for the Sanitary Engineering Section of the American Society of Civil Engineers. ◄

All-America City Competition

The National Municipal League and *Look* magazine announce the opening of the All-America award contest for 1960. The competition is open to any community in the United States with an outstanding record of progress through citizen action. The achievements must be citizen-inspired and benefit the whole community. A city need not be a model community to win. However an All-America City must demonstrate good citizenship according to the definition of eligibility in the announcement.

Eleven communities receive the award annually. Selections are made by a panel of 12 outstanding leaders in government, education, business and civic affairs. Entries must be filled out and returned to the League by September 19, 1960.

Requests for entry forms should be addressed to: National Municipal League, Attn: All-America Cities Contest, Carl H. Pforzheimer Building, 47 E. 68th St., New York 21.

The award began through the chance inquiry of a girl reporter from the *Minneapolis Tribune*. Covering a National Municipal League meeting at St. Paul in 1949, she asked if there weren't some list of cities recognized for their excellence. In searching for a description, she used, "All-America," borrowing from the sports field.

Although there was none at the time, the National Municipal League thought it a fine idea and began the contest. The *Minneapolis Tribune* published the names of the winners for the first three years. *Look* magazine became a co-sponsor in 1952, greatly expanding the contest. ◄◄

LOW AND NARROW!

Parsons® 77 Trenchliner®

It's not much wider than a yardstick...

. . . only 4 feet-10 inches wide, to be exact! What's more, this new 77 is just 5 feet-8 inches "low" with the boom in digging position. It only weighs about 6800 lbs., for convenient trailer-transport from job to job.

Trench depths to 5 feet

Small in size, but big in capacity, Parsons 77 has a work range that will surprise you. It produces from 4.4 inches to 21 lineal feet of trench per minute, in 32 hi-lo digging speed selections. You get trench widths from 6 to 18 inches — *and maximum digging depth of 5 feet!*

The tiny 77 is heavy-duty in every respect. It has positive down-crowd on telescopic ladder boom. Self-cleaning, cast steel buckets have self-sharpening removable point-type teeth. Shiftable conveyor is instantly reversible for controlled discharge. Compact and maneuverable, the 77 turns within its own length — each crawler is independently driven, independently braked. Better check what this small utility Trenchliner can do on your service lines, small mains, footings, etc. Ask Parsons distributor for demonstration, or write to us for literature.

A big, expensive rig isn't needed to transport this little 77 Trenchliner from job to job. Its low height and weight of only 6800 lbs. — permit fast one-man trailer loading — hauling under low overhead clearances. (Big ladder and wheel-types are also available.)

Mail to: PARSONS Company, Newton, Iowa *for literature on 77 Trenchliner*

NAME________________ TITLE________________

COMPANY________________ DIV.________________

STREET________________

CITY________________ STATE________________

P21 AMC

PARSONS COMPANY (Division of Koehring Co.)
Mfrs. of: TRENCHLINERS SHAWNEE® BACKHOES, LOADERS, BLADES

HOW TO BUY THE BEST CHIPPER FOR YOUR NEEDS

❶ **Ask for a Free Demonstration.** Your dealer will gladly demonstrate the new 1960 Asplundh . . . will even run it side-by-side with any other chipper to let you compare machines and results.

❷ **Look for the features that give you these benefits.**

Chipping Speed. By actual test Asplundh is the fastest chipper made—which your dealer will gladly prove.

Low maintenance cost. The Asplundh has fewer moving parts. This means lower maintenance, less down time.

Safety to workers and passers-by. Asplundh blades are tapered and wedged—cannot fly out.

Ease of operation. Unskilled labor can operate the Asplundh with ease—change blades quickly.

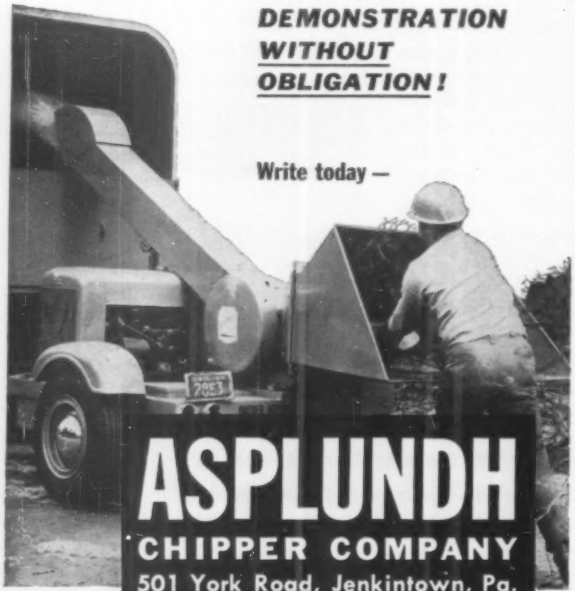
Highway safety. Asplundh's underslung engine and axle place the center of gravity low for safe, true highway tracking.

Big capacity. Asplundh chips all you can feed it—limbs up to 6" diameter—hour after hour, day after day.

❸ See for yourself why Asplundh outsells all other makes. Write for new brochure of testimonials from satisfied users.

ASK FOR A DEMONSTRATION WITHOUT OBLIGATION!

Write today —



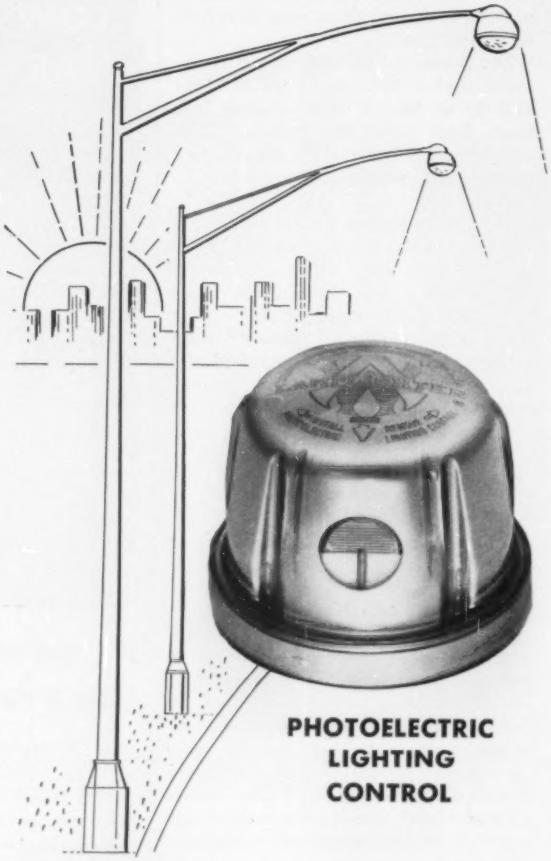
ASPLUNDH

CHIPPER COMPANY

501 York Road, Jenkintown, Pa.

TUrner 7-2500

Proven in service by the world's largest tree company



PHOTOELECTRIC LIGHTING CONTROL

NEW LAMPLIGHTER®

(Series 15,000)

sets a new standard . . meets every industry requirement in ONE control!

Low initial cost plus long life and easy maintenance make LAMPLIGHTER *the* control to meet *your* specific needs. Offers surge and lightning protection, ample time delay, twist lock base, easy handling. Externally adjustable light level from 1 to 10 ft-c., fail-safe, weather-proof. Optional fuse protection. Exhaustive tests prove LAMPLIGHTER'S superior engineering and rugged construction. Write for details about LAMPLIGHTER and complete line of accessory mountings.

The Acme Wire Co.

Utility Products Division, Dept. MP-3

New Haven 14, Connecticut

After applying these hot thermo-plastic markings, the lining machine will not return to this section of Brockton streets for more than three years.

Zero $-- Cost of Years' Maintenance

One-year test of hot thermo-plastic street markings in Brockton, Mass., led to the application of 40,000 linear feet—and savings

By **WILLIAM A. GILDEA**
City Manager

When, in 1957, officials of Brockton, Mass., decided to test hot thermo-plastic street markings, they had been applying paint on major streets at the rate of six times each year. More frequent applications would have been attempted, but the weather in Brockton makes it impossible for our highway department to do any street marking during the fall and winter months.

The city contracted with the Perma-Line Corporation of New England to apply a test section that they could compare with existing lines. The test portion has been in daily use for more than three years and no part of it has been replaced. In operation today, it has cost the city nothing in maintenance costs; it is still doing a creditable job and promises years of service to come.

Savings at the end of the test led to cost comparisons and projections—and the decision to expand the use of the hot-application material. To date, with 40,000 linear feet of Perma-Line marking down, the city has paid out only the cost of the original application.

As the traffic pattern of near-by Boston has been supplemented by major arteries, automotive traffic filtering through Brockton has grown steadily. The city's concern for the safety of its 75,000 people, its churches, schools, hospitals, public buildings, shopping centers, factories and commercial areas has grown with street use.

Foremost safety features are the white street markings that control traffic flow, right and left-hand turns, fire lanes, cross-walks, no-parking lanes, bus stops, parking meter spaces and parking lanes in off-street parking lots. Even more vital is clear demarcation at school, church and factory crossings. The greatest possible degree of safety precaution must be exercised in these areas—but they must be maintained within the budgetary limitations of the city.

The test section—and the subsequent applications — have proved that the plastic street markings have given our city greater protection than the paint we used only a few years ago.

Other Advantages

The new Perma-Line marking, applied in accordance with state requirements (strips 24 inches long and six inches wide, with six-inch skips), dried in minutes, compared with drying time of between six and twenty-four hours, depending

(Continued on page 163)

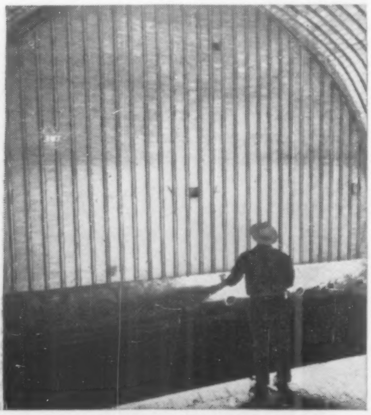
The new incinerator at Whitemarsh. Note the neat compact lines of the building and the low stacks of the wet scrubbers which emit a plume of steam. Glace & Glace, Inc. were consulting engineers for the project.

WHITEMARSH TOWNSHIP INCINERATOR

new method lowers refuse disposal costs—gives communities smoke-free, odorless, economical incineration

Communities across the country have experimented with various methods of refuse disposal. Their experiences amount to a test-in-actual-use of practically every approach to the problem. Today, backed by cost, convenience and long range land use considerations, many have gone to incineration as the best solution. This is especially true since a new type of incinerator now brings costs into line with most community budgets.

This new type of incinerator was adopted by Dravo Corporation after intensive research into the refuse and sludge disposal problems of communities of all sizes. The Dravo Incinerator provides almost completely automatic operation and reduces the number of operators required. It takes full advantage of the latest materials handling techniques to eliminate litter. It utilizes modern combustion principles to eliminate smoke and odor. Each part of the system has been selected for rugged construction and ability to contribute to overall efficiency. Two of the most important parts are the storage conveyor and the furnace.

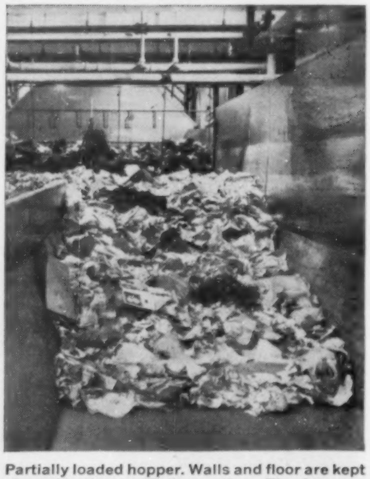


Water-cooled furnace during construction. The cooling pipes can be seen between the courses of refractory brick. Oil burners are used for ignition only; no additional fuel is needed to support combustion of refuse.

THE STORAGE CONVEYOR. Trucks are dumped indoors so that trash will not be scattered around the area. Refuse falls through an opening in the floor directly into the conveyor hoppers. The hoppers oscillate mechanically, throwing the material forward. This action is self-scouring and refuse does not stick to the sides or bottom of the hopper.

The refuse empties into feeders which charge it into the furnace. Automatically operated on a controlled time cycle, the feeders lock a layer of refuse against the furnace gates. This maintains an effective seal, permitting good control of furnace draft.

THE WATER-COOLED FURNACE. The furnace is constructed of first quality fire brick in which water filled cooling pipes are embedded on 8-inch centers. The cooling pipes maintain furnace wall temperatures below the slagging point of the refuse ash. This construction permits intermittent operation without the need for a long cooling period. In addition, the walls are thinner, and refractory maintenance is reduced to a minimum. The higher combustion temperatures made possible by water cooling improves burning rate and eliminates noxious odors.



Partially loaded hopper. Walls and floor are kept clean by the oscillating action. The hoppers are mounted on air springs, which compensate automatically for the load in the conveyor.

The Dravo Incinerator is the economical solution to the problem of sanitary, convenient refuse disposal. For full information, write or call Dravo Corporation, Pittsburgh 22, Pennsylvania.

DRAVO CORPORATION

(Continued from page 161)

upon the weather, for paint. Traffic tie-up during marking operations is all but eliminated. Plastic marking crews "get in and get out." Street painting was done at night under the older program—now marking is done during the working day.

Though the dirt and grime of everyday traffic may stain the plastic, the first rain cleans and brightens it, and automobile tires give it an added polish. Night safety can be increased by an application of glass beads to the hot plastic.

The highway department estimates that annual savings of about $10,000 have resulted from the exclusive use of the plastic material. Henry Hall, superintendent of streets, has reported that complaints from civic groups, decrying almost invisible markings at important street crossings, are no longer a problem. Calls that come to his office are now congratulatory.

Hall also noted that, when marking was done at night, crews had to use hurricane lamps. "We lost 20 dozen every season—I'd like to know how many of them came in handy during our recent storms," he wondered. It is certain that their replacement cost would have bought quite a few feet of street markings.

Though the State of Massachusetts does not have statutory jaywalking regulations, Brockton started its own campaign several years ago. It had to be halted, finally, because of the difficulty in maintaining visible street marking guides. Today, if desired, the program can be reinstituted and the results certainly will prove more rewarding.

Cost Comparison

Cost comparison indicates that the Perma-Line markings, though higher in initial unit cost, have generated significant savings even during the span of three years that they have been serving Brockton. The total cost of the 40,000 feet of hot-application material was $17,000. There has been no additional expense.

The same 40,000 feet of painted lines cost $4,000 for each of six applications (10 cents per linear foot) each year, or a total annual cost of $24,000.

Added benefits have been greatly improved community relations, decreased public-safety worries, municipal personnel released to other duties and relieved traffic conditions.

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UNDERGROUND BORING MACHINE

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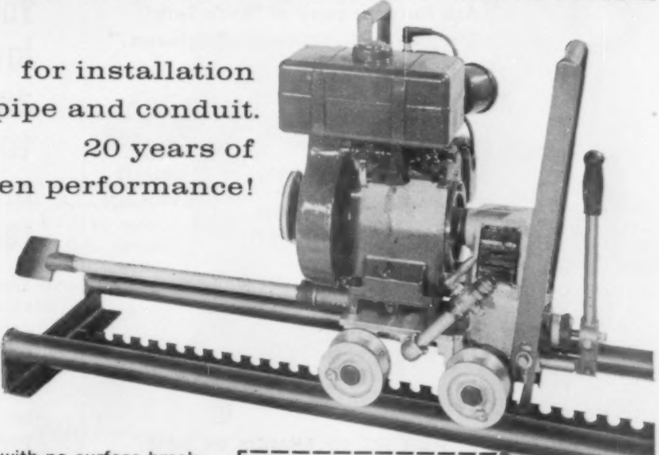

- BORES—with no surface break
- BORES—up to 250 feet in length
- BORES—up to six inches diameter
- BORES—so drill stem of pipe of conduit stays
- BORES—500 feet on 1 Gal. of gas
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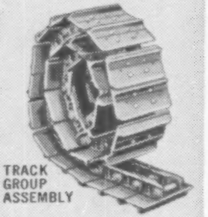
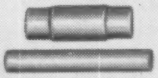
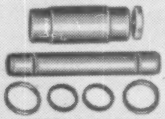
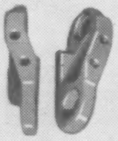

TRACK GROUP ASSEMBLY


BUSHINGS AND PINS


MASTER BUSHINGS, MASTER PIN & SLEEVE SETS


LINKS

ROLLER AND FINAL DRIVE SEALS

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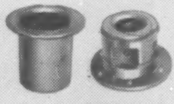
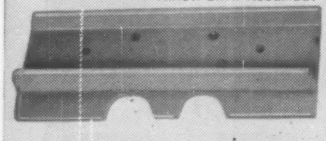
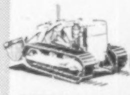
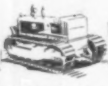
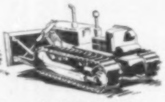

ROLLER BUSHINGS & ASSBYS.

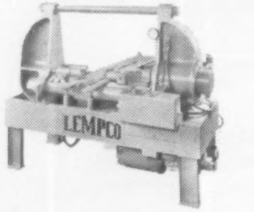
TRACK LINK ASSEMBLY


GROUSER SHOES


CATERPILLAR D-2, D-4, D-6 D-7, D-8, D-9


INTERNATIONAL TD-6, TD-9, TD-14-14A, TD-18-18A, TD-24


ALLIS-CHALMERS HD-5-6, HD-9-11, HD-15-16, HD-19-20-21



WRITE FOR INFORMATION ON THESE REVOLUTIONARY NEW TRACK PIN PRESSES

For details wire or write

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Street Flushers
"THE MACHINE OF A DOZEN USES"

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SUPERLINER MODEL... REAR ENGINE DRIVE

You'll be proud of this modern, streamlined street flusher! Regularly furnished with 3 nozzles, 600 G. P. M. pump, 800 to 3000 gallon tank, mechanical controls, vertical valves. Motor enclosed in rear compartment is quickly accessible for servicing. Get literature, prices and delivery from your Etnyre dealer or write us today.

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Good Roads MACHINERY LEAF LOADER

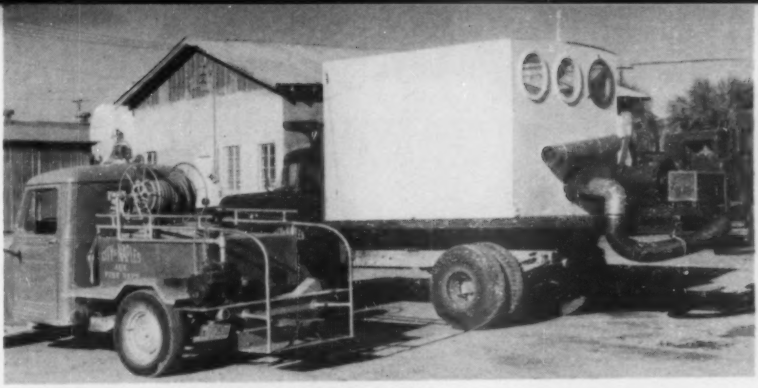
Your low-cost answer to leaf and litter removal

The Good Roads Leaf Loader provides economical elimination of messy accumulations of leaves and debris on sidewalks, roads, parks, cemeteries, and other public grounds. It is trailer mounted, ready to hitch to any truck. Powerful fan, driven by 4-cylinder industrial engine, sucks up wet or dry leaves and litter, blows them into bed of towing unit. Fixed snout provides automatic pickup of leaves in 30" path, and a flexible rubber intake hose is furnished for wide-area pickup and hard-to-reach places. Flexible discharge hose permits maneuvering of truck and leaf loader during operation.

For complete details see your Good Roads distributor or write:

Good Roads MACHINERY
GOOD ROADS MACHINERY Corp.
MINERVA, OHIO

Florida's famed "Millionaires' Haven" combines the latest in street-cleaning equipment with home-made units to provide . . .



Two home-made units, the "Little Jenny" (left) and the vacuum leaf collector, help to keep the city clean and attractive.

Cleaner Streets at Low Cost

By **F. M. LOWDERMILK***
City Manager
Naples, Fla.

Mosquito control, here being conducted by twin fogging units, supplements measures taken by Collier County.

Adoption of mechanized, vacuumized sweeping saves Naples 89% in man hours and at the same time covers a wider area. The enclosed broom cleans a 7½-foot path.

Naples, with a population of only 4,750 persons, probably has more millionaires per square mile than any other United States city. Nevertheless, we take pride in our low tax rate (13 mills on assessed valuation which is 75% of replacement value) and encourage ingenuity in developing cost-saving maintenance and operating techniques. This policy pays off handsomely in results, the latest in street cleanliness.

For example, until recently we hand-swept our 56 miles of paved streets. Three men with pushbrooms worked three days a week from 5 A.M. until near noon in the business district. We also had 10 to 12 men sweeping curbs and gutters from one to 1½ days weekly.

However, this method was no longer satisfactory. First of all, it was too expensive. Secondly, we wanted a still higher standard of street cleanliness and to achieve this realized the necessity of adopting mechanical methods.

After carefully checking mechanical sweeping methods we decided the new vacuumized system developed by Tennant would give us the extra-clean sheets we were after. Consequently we purchased a Tennant Model 100 sweeper and put it to work.

Whereas we formerly averaged around 288 manhours per month for sweeping, we now do the job in 32 manhours. Furthermore, we can cover more area, including 2½ curb miles of U. S. 41 (The Tamiami Trail), and our streets are far cleaner than they have ever been. Another advantage is the elimination of the traffic problem in the downtown area, for the work is started early in the morning and completed before traffic begins.

A powerful vacuum system controls all dust, eliminating the need to stop at hydrants for water. This also speeds up the work.

The machine covers the entire city, with one man operating the sweeper and a second man working ahead of the unit to sweep trash off the parkways into the gutter. A dump truck picks up the sweepings.

To supplement the sweeper in

(Continued on page 167)

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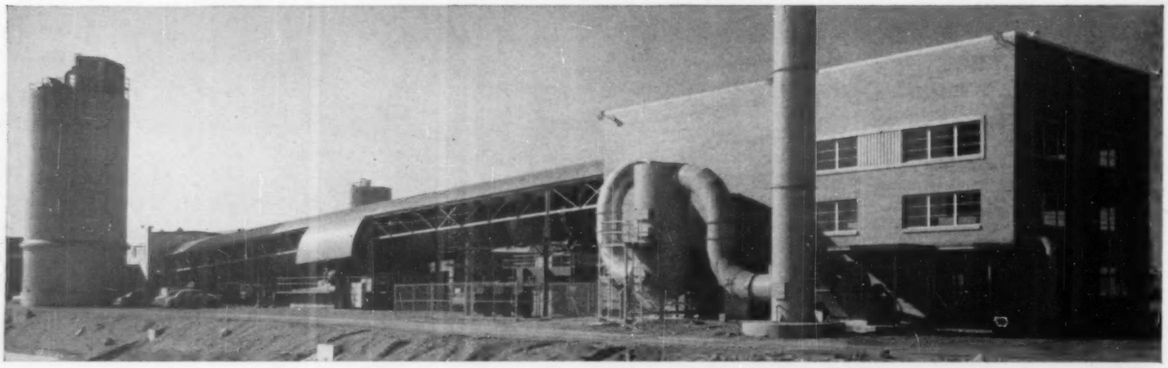
* Prior to accepting the position of City Manager for Naples in 1948, Mr. Lowdermilk served as Superintendent of Public Works and City Engineer at Fort Myers and maintenance engineer for the Florida State Highway Department.



Up to 150 tons of lime a day can be recovered by Dayton's Lime Recalcining Plant. City expects to get its $1,330,000 plant investment back in 20 years — plus a surplus estimated in the millions. *Consulting Engineers: Black & Associates, Gainesville, Florida.*

at City of Dayton –

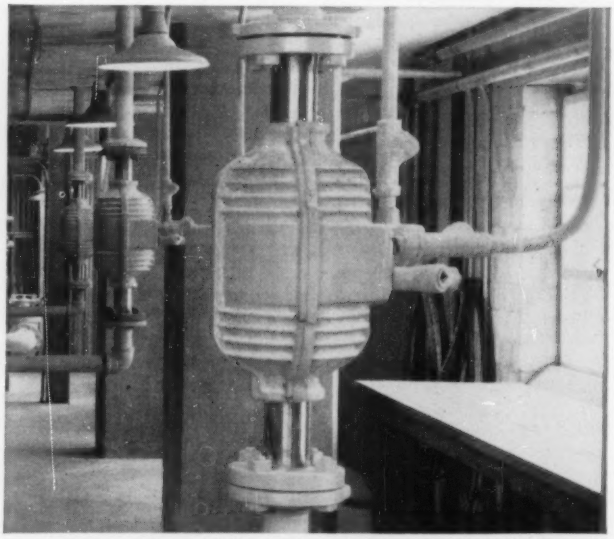
self-amortizing lime recovery plant designed around Magnetic Flow Meters

Dayton, Ohio's million dollar lime recalcining plant would warm the cockles of the thriftiest Scotsman's heart. Designed to recover lime used in softening city water, the plant actually recovers up to 20% more lime than originally added, with additional capacity to process most of the lime sludge accumulated over the last 5 years! City plans to sell the overage — recover its investment in short order.

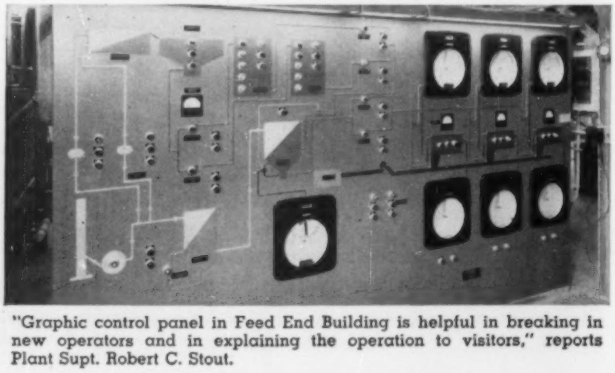
Dayton's Lime Recalcining Plant was designed around Foxboro Magnetic Flow Meters. Sludge, which would foul-up conventional head-loss devices, is easily measured since these unique meters have no flow restrictions. Measurement is instantaneous—continuous—linear. Rate of flow to centrifuges can be controlled exactly.

Maintenance on the Magnetic Flow Meter is practically nil. There are no pressure taps to get plugged or frozen . . . no seals or purges . . . no moving parts to foul.

For practically *any* liquid, however "difficult", you'll find the Foxboro Magnetic Flow Meter a sound investment. Find out about this fabulous instrument today. Ask your Foxboro Field Engineer for details, or write for Bulletin 20-14C. **The Foxboro Company, 957 Neponset Avenue, Foxboro, Massachusetts.**



Three Foxboro Magnetic Flow Meters record and control the flow of sludge to centrifuges at Dayton's Lime Recalcining Plant. Meters cannot plug up because they have no flow restrictions.



"Graphic control panel in Feed End Building is helpful in breaking in new operators and in explaining the operation to visitors," reports Plant Supt. Robert C. Stout.

FOXBORO
REG. U.S. PAT. OFF.

MAGNETIC
FLOW METERS

(Continued from page 165)

picking up heavy leaves and trash from alleys and parkways, we built our own vacuum leaf collector at a total cost of only $1,585. Our mechanic, Stubb Waggoner, made this unit out of an old Buffalo mosquito-fogging machine and a used 1½-ton Chevrolet flat-bed truck purchased for $400.

The collection unit, costing $1,185 for parts and labor, contains a 4-cylinder, 22-hp Wisconsin engine which drives the 16-inch model 14B turbine through V-belts. The turbine discharges air through a 16-inch-diameter pipe into a 12-cubic-yard hopper. An 8-inch suction pipe inletted into the discharge line at a 45° angle serves as the pick-up tube. The main stream of air passing over the open end of the 8-inch connection produces a powerful vacuum in the smaller line, which in turn picks up the leaves and debris. Discharge doors allow manual unloading by raking or by forking.

"Little Jenny" is the name we have given to our most versatile made-in-Naples maintenance aid. Basically it is a utility fire truck made of parts of a 1935 fire truck and a 1948 Willys Jeep pickup. In making this unit we cut the original fire truck tank in half, altered the rear steps, welded on a hose reel, put a 3/16-inch diamond-plate catwalk down each side and across the rear. For pumping we mounted a 1½-inch Gorman-Rupp pump with the tank and hose reel. A small brass bell is on top of the cab. This unit cost us only $495.

We use this multi-purpose unit for mist-wetting the street base in paving work; occasional watering of street plantings; applying liquid fertilizer on our parkways; spraying palms when they are in need of food; carrying utility signs in emergencies; and for putting out small fires.

Municipal affairs in Naples are administered by Mayor Dr. Francis Ford and a six-man council. Administrative Assistant Vince Wood is in charge of street cleaning and maintenance. ◄◄

Big Police Radio Service Contract

New York State has signed a long-term contract with the General Electric Co. under which G-E assumes ownership of all two-way radio units now operated by the Division of State Police. Previously, complete communication service was provided to the State Police by New York Telephone Co., which is discontinuing the arrangement.

The program involves a state expenditure of around $1,200,000 prorated on a monthly basis over the next five years. The state had a choice of investing several million dollars in police radio equipment and establishing its own 'round-the-clock service organization, or of contracting for communication service.

Backbone of the program is General Electric's service station concept of system maintenance. In every area where State Police have a major installation, General Electric has a service station within 35 miles.

The New York State Police have 814 mobile radios and 48 base station transmitters. G-E will assume responsibility for both corrective and preventative maintenance and provide for system expansion when necessary to fulfill State Police operational requirements. ◄◄

the "*Big Scottie*"...

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BIG SCOTTIE
TARRANT MFG. CO.

CAB-CONTROLLED

TARCO'S *double auger*, body-type all purpose Spreader for Ice Control

The "Big Scottie" gives you these unique advantages: (1) the **double-auger spreading system** lets you apply more material per minute (salts, sand, cinders, or mixtures), (2) full-covering, heavy **top screen** is made in **4 hinged sections** so 1 man can handle, (3) the special **body design prevents** your **material** from **bridging** over the augers.

You'll be able to cover **more miles** of winter-time icy pavement **much faster.** The "Big Scottie" is an ideal spreader for spreading straight de-icing salts . . . you can apply as little as ¾ of an ounce per square yard at 15 M.P.H.

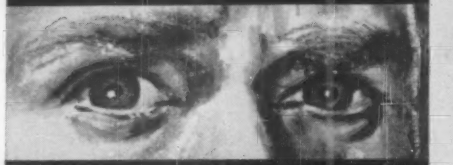
The "Big Scottie" slips in or out of a dump truck body in 15 minutes; or mounts on a truck chassis in less than 30 minutes. Besides the exclusive features of the double-auger spreading system and the non-bridging body design **(no agitator needed)**; the "Big Scottie" has all the regular features a good spreader should have: all welded steel construction; extra heavy, well protected roller chain drive (with **special lubrication system)**; more than ample drive power **(30 H.P.)**; large, sealed bearings; simple, quick-acting width control; an easily read material application rate table for various materials at various truck speeds; stainless steel spreading disc.

See your nearest Tarco dealer or write us for more complete "Big Scottie" details.

TARRANT MFG. CO.

23 Jumel Place, Saratoga Springs, N. Y.

Look beyond the price tag and you'll see why



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OUTSELLS ALL OTHER MAKES OF SERVICE BODIES COMBINED

Precision-crafted by expert workmen who grind welds marble-smooth and finish off all dangerously sharp tray and shelf edges.

Compare doors! Open and slam ours . . . then competitors'. Note our "solid" sound, balanced "feel", superior construction, and "can't-bind", nylon bushings.

Check the styling . . . the modern wheelhouse design . . . the flight-swept, tapered rear. You'll find no other body with so many features.

Finest recessed latches on the market. Fool-proof, safety catches make it impossible for doors to fly open in travel.

Concealed fenders with built-in "lastability" assure at least 10 years of rugged service . . . truly your best body buy.

IMMEDIATE DELIVERY! WRITE FOR BULLETIN AND NAME OF DEALER.

Optional Canopy Top, at left, has 53" floor-to-roof height. Body is also available with compartment-high telescopic roof.

McCABE-POWERS BODY COMPANY
5900 N. BROADWAY • ST. LOUIS 15, MO.

HERE is the answer to

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Lightweight, Easily-Adaptable

SAFE-T-CONE

TRAFFIC GUIDES

SAFE-T-CONES are proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities ...for traffic channeling, utility repairs, line painting and emergency blockades.

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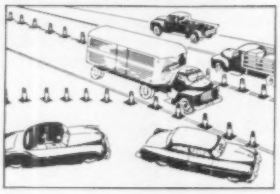

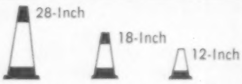

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Solid-Color PVC* POLY-CONES—18-inch and 28-inch sizes. Outlasts ordinary cones without upkeep!

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RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

CUT CLEAN WITH CLEAN-CUT!

Clean-Cut 72 Mows at 8 MPH

Cut Grounds Mowing Time in Half!

Get a clean, even mowing job from Clean-Cut's "floating" mower units. Mowers are so maneuverable you make 90 or 180-degree turns at top speed — within the length of the Tractor.

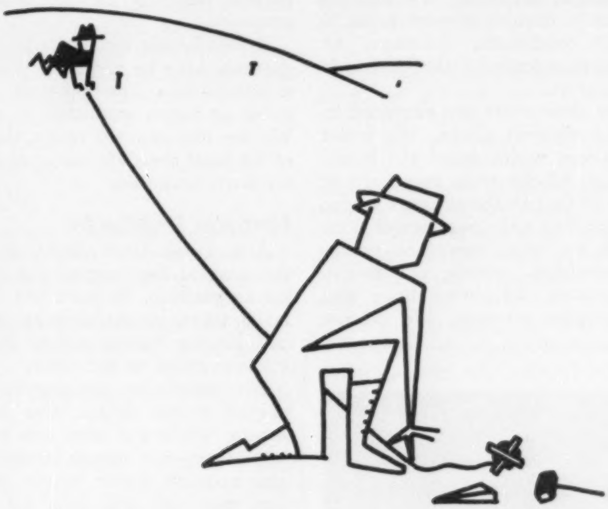
Three riding mowers available — the Clean-Cut 72, 36 and 24 — A Clean-Cut Mower to fit *your* needs!

Free Literature — Demonstration!

Clean-Cut 24 or 36

Write today for colorful FREE "Mowing Magic" folder giving full details about Clean-Cut Mowers. Ask about a FREE Demonstration.

CLEAN-CUT MOWERS INC.
P.O.BOX 701-F DUNBAR, W. VA.



How We Control Our Subdivisions

By **G. E. VARENHORST**
City Manager
Salem, Ill.

Salem, Ill., is a relatively small city with its share of romantic history behind it. Here William Jennings Bryan was born on March 19, 1860. The GI Bill of Rights of World War II originated here at the local American Legion Post. Nevertheless, despite our colorful background we recognize that a city must look forward and anticipate the future. We want it to be a credit to our past.

The control of subdivisions is one of those actions of today that should enable those who will follow us to continue building constructively within the framework of a free democratic society. Our nation is growing and that growth is taking place chiefly in our urban areas. Salem has to accept responsibility for its fair share of this increase. Our regulations should insure that, when people build in Salem, they will do so in a manner that will insure a good, wholesome community that will stay so, for years to come.

We call a "subdivision" any tract of land divided into two or more lots on which buildings will be erected. We insist that any builder or subdivider planning such work in Salem present a plan to the City Planning Commission and obtain the Commission's approval. The builder can obtain this by seeing that his plat complies with standards of design listed in our ordinances. The principal features will be described in the following paragraphs.

Streets must afford convenient access to all property within the subdivision. All streets must be public; we do not permit any private streets. Moreover, the streets must extend to an existing adjoining street unless the extension is not practical.

Alleys must be provided in all business, commercial, or industrial areas. We prefer not to have them in residential areas, but will permit them if the subdivider produces satisfactory evidence of their need.

Street widths vary with the type of street. Major streets, used primarily for heavy traffic, must have widths from 80 to 120 feet between property lines. Residential streets must have a 60-foot right-of-way. Alleys serving business areas must have a 24-foot right-of-way. Cul-de-sacs must be no more than 500 feet long and have a permanent turn-around with an inside radius of not less than 50 feet at the property line.

Blocks, in general, must be not less than 600 feet or more than 1,200 feet long. We will make exceptions to secure the efficient use of land or a desired street pattern. We require the blocks to be deep enough

(Continued on page 170)

POPULAR **NEW**
® Saddle-Mates

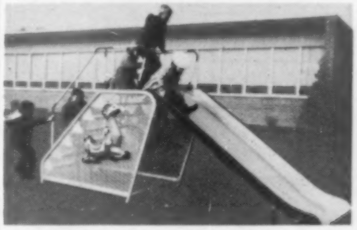
Appealing Game-time "Originals" Inspire a Series of New Products

Game-time's Saddle-Mates come from children's Circus and Nursery favorites—five irresistible birds and animals for fun-filled rides. Choose from Horse, Duck, Donkey, Camel, Swan—molded in tough fiberglas, colorfully finished in weatherproof, extra-durable Epoxy paints.

Pedestal **SADDLE-MATES®,** shown above, are on pedestal springs, which are "pinch-proof" and give lively rocking motion. Models are available for portable use or permanent installation.

SADDLE-MATE SWINGS

Cradle-mounted Saddle-Mates, for "always-parallel" V-chain suspension using double top rail frames. Available in complete sections with 4, 6, 9, Saddle-Mates, or by individual units.



SADDLE-MATE SLIDES

Tot size, 4' high by 3' wide, all-steel slides, decorated with bright-colored plastic Saddle-Mate medallions.

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(Continued from page 169)

to receive two tiers of lots in most cases.

Lots, insofar as practical, should have side boundaries at right angles to the centerline of straight streets, or to the tangent of the centerline of curved streets. If public sewers serve the subdivision, we permit a lot with a minimum area of 7,000 square feet, with a width of 60 feet at the building set-back line, and with a 90-foot depth. If there are no public sewers the width must be increased to 75 feet and the area to a quarter of an acre. We reserve the right to require greater areas if the soil conditions, drainage, or other factors indicate that there is a need for it.

Utility Easements are required in all areas without alleys. We insist on a 20-foot width down the backs of lots on blocks with two tiers of lots, or 15 feet in those cases where the block has only one tier of lots. In such an area, we place power lines, conduits, sewers, gas mains, water mains, telephone lines and other similar services. We do not permit building on the easement property.

Public Lands for parks and playgrounds may be required whenever a subdivision has an area of six acres or more, exclusive of streets. We do not require more than 5% of the total area, exclusive of streets, for such purposes.

Natural Features

Any subdivision must preserve the natural features of the land as far as possible. It must not destroy large trees, water courses, historic and similar beauty assets that add attractiveness to the area.

We insist on adequately engineered storm drains and sanitary sewers when the area can be connected to our sewer system. We also require water mains of cast-iron pipe not less than six inches in diameter. We require fire hydrants at intervals of not more than 400 feet. Each hydrant must have a seven-inch barrel and have two 2½-inch hose connections and one steamer connection. If for some reason, the subdivider cannot connect to the city's water system, he must make provision for an adequate alternate water supply approved by the city.

" . . . must not destroy trees that add attractiveness to the area."

He must provide each water or sewer main with house service connections, and indicate their location on maps filed in the office of the city clerk.

Street Design

We require that major streets shall be built to grades not exceeding 7%, and that other streets have grades not exceeding 10%. We do not permit street jogs of less than 125 feet if this can be reasonably avoided.

We require all residential streets

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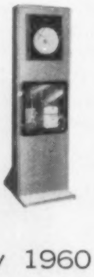

For more information, write Dept. S-141.00

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to have roadways at least 30 feet wide; major streets, 40 feet, and business streets 50 feet. We insist that streets in the subdivision be improved with a durable, hard-surface roadway with a base course of crushed stone or gravel at least seven inches thick. In addition, we require:

- **that the subdivider complete all underground work, such as sewer and water mains, before placing the street surface.**
- **that he provide a curb and gutter along the outside of all street pavement.**
- **that he surface all alleys with five inches of compacted crushed stone or gravel.**

We may require sidewalks; however, we do not always do so in residential areas.

We feel sure that those building new homes within our historic city will erect them to a city plan that will be useful for many years to come. We feel confident that those Salemites of the years beyond 2000 will feel that it has been planned well.

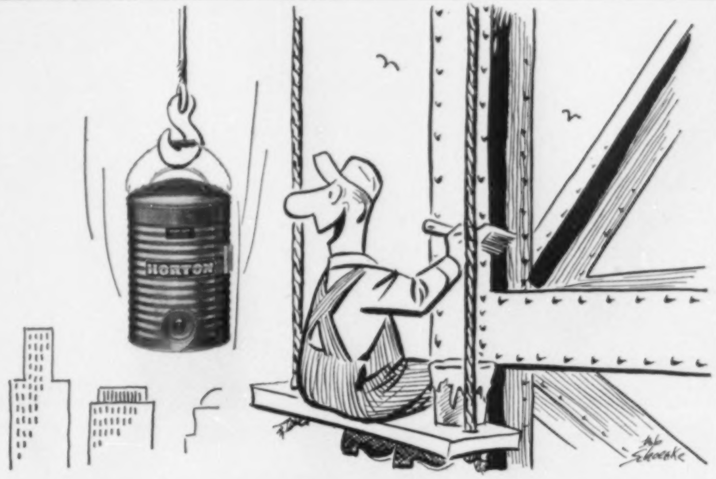
We will be glad to forward a complete copy of our subdivision ordinance to any city official who requests it. ◄◄

Fraser, Mich., Has Natural Fluoridation

Dentist-City Councilman Otis McKinley, of Fraser, Mich., asserts that his home town is an unbiased example of the value of water fluoridation. Fraser water, taken from wells, contains 1.5 parts of fluoride naturally; the community ranks at the head of the list in freedom from caries.

He was elected one of the first councilmen when the city was incorporated in 1957. As a dentist, he felt he should start exploring the need for fluoridation of the water. Harry E. McEntee, superintendent of water and sewers of nearby Mt. Clemens, was retained to analyze the Fraser water. He found it contained 1.5 parts of fluoride and that no artificial fluoridation was needed.

According to Lou Polmanteer, superintendent of water in Fraser, the community's water includes: iron, 0.5; chloride, 380.0; hardness as $CaCo_3$, 108.0; fluoride, 1.5. ◄◄



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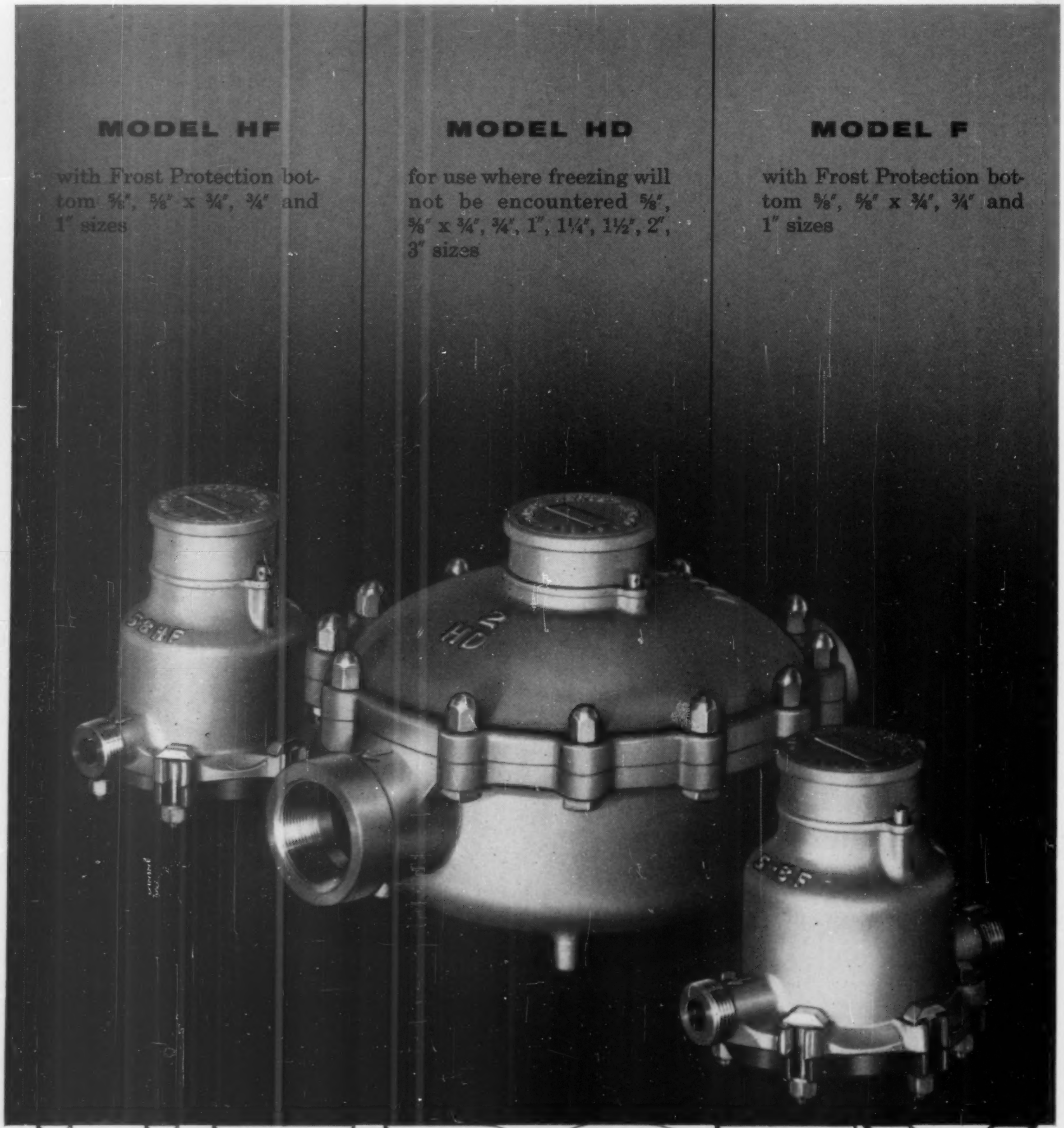

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Legal Off-Track Betting Steals Limelight

. . . as mayors of U. S. and Canada discuss financing, housing, metropolitan problems at Chicago conference

The International Municipal Assembly, held last month in Chicago, hit the headlines when mayors of three major cities observed that legalized off-track betting was a juicy, untapped source of municipal revenue. This took place at an unusual press conference, whose joint participants were Mayors Richard J. Daley, Chicago; Richardson Dilworth, Philadelphia; Norris Poulson, Los Angeles; and Robert Wagner, New York.

Mayor Wagner introduced the subject when answering questions about how municipal finances might be improved. He estimates that both New York City and New York State would receive an additional tax revenue of $100,000,000 under the plan considered by the New York state legislature over the past two years. The plan would merely extend the present system of pari-mutual betting on horse racing to bets placed on the same races at regulated betting booths away from the race tracks. Under the present system the New York State government receives $90 million per year.

This new revenue, he asserted, would permit New York City to ease many of its tax burdens and to eliminate certain nuisance taxes that are now necessary. Chicago's Mayor Daley and Los Angeles' Mayor Poulson both saw the income potential of proposals such as the one New York City is considering. Mayor Dilworth alone offered no comment.

The Assembly was a joint meeting of the U. S. Conference of Mayors and the Canadian Federation of Mayors and Municipalities. The primary subject of discussion was that of metropolitan problems now facing urban areas.

Anticipated Advances

To correct the growth of blighted housing during the next decade, Dr. Philip Hauser pointed to the need for building and housing code enforcement and the adoption of certain legal measures that would make it not only illegal but uneconomic to permit urban decay. He called for strengthening of housing courts to give more protection to the tenant and the urban community at large. He also advised changing property assessment pro-

(Continued on page 174)

New officers of the U. S. and Canadian mayors' organizations include: for USCM, Haydon Burns, Jacksonville, Fla., vice-president and Richardson Dilworth, Philadelphia, president; for CFMM, Sidney Buckwold, Saskatoon, Saskatchewan, president, and Robert M. Simpson, Arnprior, Ontario, immediate past president.

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(Continued from page 173)

cedures which now give the slum landlord reduced assessments, thereby making his slum housing highly profitable. He further recommended adjustments in the federal income tax law which now gives landlords depreciation allowances without requiring reserves to maintain the property at desired standards. He suggested requiring a certificate of compliance with codes as a condition for the sale of the property, and provisions, particularly when property is purchased by public agencies under eminent domain procedures, to ignore income derived from illegal uses of the property in fixing the sale price.

Dr. Hauser anticipated these developments during the next decade:

- **The Negro will become increasingly accepted socially, politically and economically as he grasps new opportunities and advantages in his new urban environment, and moves away from a rural slum environment.**
- **Automobile traffic as well as parking in various zones of metropolitan areas will be increasingly prohibited.**
- **Mass transit will increase and be considered as essential as water supply or sewerage.**
- **Metropolitan area-wide governmental structure and function will accelerate, particularly in planning and functional services.**
- **Home rule for local governments will increase, and the domination of state legislatures by rural interests will decrease.**
- **Local-Federal governmental relationships will grow and, as a result, state governments will become the fifth wheel in the governmental structure.**
- **Educational strains will appear in the high-school level instead of elementary schools as has been the case in the past decade. Juvenile delinquency will increase, if only because there will be greater numbers in that age group.**
- **There will be increased governmental intervention into economic and social affairs on all levels of government as the metropolitan complex increases interdependence and requires more regulation.**

Dr. Hauser is professor of sociology and director of the Population Research Center, University of Chicago.

Toronto's Metro

The most spectacular example of metropolitan government in the United States and Canada was explained by Mr. F. C. Gardiner, Chairman of the Municipality of Metropolitan Toronto.

Originally, the Metropolitan Toronto Corporation was made responsible for water supply, sewage disposal, arterial highways, the financing of education, metropolitan parks and certain welfare services, plus planning. Public transportation was assigned to the Toronto Transit Commission, appointed by the Metropolitan Council. Metro also received the same powers governing housing and redevelopment as all other municipalities. Later, Metro received responsibility for policing, licensing and air-pollution control.

Metro does not tax any taxpayer directly. Instead, it assesses each of the 13 municipalities according to the ratio of the assessed value of each municipality to the combined assessed value of the entire metropolitan area. Metro has the power to reassess all property in the area on precisely the same basis, so that levies will be equitable.

Since 1954, none of the local municipalities within the metropolitan

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region has had the power to issue bonds. Metro coordinates capital expenditures and finances them under one consolidated capital works program, using the combined credit of all municipalities.

The Metro council consists of 25 members. It includes the elected head of each of the 12 suburban municipalities, the mayor of Toronto and 11 other members of the Toronto city council, and a chairman who is required to be elected each year by the members of the Council. He does not have to be an elected official.

Canada also has a Montreal Metropolitan Commission, a Winnipeg Metropolitan Council, and is studying the possibility of organizing a Vancouver metropolitan government. In the United States, the only similar organization is Metropolitan Dade County, embracing metropolitan Miami, Fla.

Among their resolutions, the mayors again strongly urged a cabinet-level post for urban affairs. They also expressed opposition to attempts at taxing municipal bonds and urged greater emphasis on urban renewal.

Mayor Richardson Dilworth is the new president of the U. S. Conference of Mayors, succeeding Mayor Richard Daley, Chicago.

Noted Sanitary Engineer

Renville Stevens Rankin, internationally known sanitary engineer, passed away on June 6, following a brief illness, closing a career of 47 years devoted to the advancement of sanitary engineering practices in the United States and abroad.

His earliest association with the sanitary engineering profession came during and directly following his student years, at the water filtration plant in Minneapolis. He joined the consulting engineering firm of Greeley and Hansen in 1917, remaining with them for ten years. He then became a member of Dorr-Oliver's sanitary engineering staff from 1927 until he retired in October 1956. Subsequent to his retirement he continued as consultant on sanitary engineering practices to Dorr-Oliver and its subsidiary companies abroad.

Renville Stevens Rankin

He was the author of numerous papers, particularly on biofiltration and separate sludge digestion. In 1948 he won the Kenneth Allen Memorial Award, presented by the New York Sewage Works Association, for his writings on "Digester Capacity Requirements."

Mr. Rankin was born in Henry, S. D., the son of David and Stella R. Rankin. He was a graduate of the University of Minnesota in 1913, and a member of Tau Beta Pi.

Surviving are his wife, Mrs. Mildred Sesso Rankin, and a sister, Mrs. Eva M. Kalten of Wells, Minn.

Advanced Management for City Managers

Eighty-one city managers, representing 28 states and two Canadian provinces, were awarded certificates at concluding ceremonies of the first annual Advanced Management Training Program. The program, held during the week of May 1-7, 1960, was sponsored jointly by the International City Managers' Association and the Center for Programs in Government Administration at the University of Chicago. The objective was to combine the managers' practical experience with theoretical concepts of administration.

Managers attending the program were awarded $90 scholarships by the University of Chicago to defray tuition. A Ford Foundation grant financed the scholarships.

The program, conducted through the medium of lectures, discussion sessions, and informal meetings, was built around five major topics: policy planning; decision-making; communications; delegation and control; and motivation.

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A Councilman Builds the Town Council Table

The object was to get an arc-shaped table that would fit our meeting room and at the same time permit each of our nine councilmen to face the audience. The difficulty was that such a table would have to be custom-built and would cost around $1,200, considerably more than the Council wanted to spend for furniture.

We solved our problem through the craftsmanship of Councilman J. Leonard Vliet, who made the table for us at a materials cost of $265. He asked in addition only that the remaining eight councilmen join him in a "work party" to put the final finish on the table itself. We have a feeling that this is the only council table in the nation made by one of the councilmen. If there are others, we would like to hear of them.

The need for a larger table arose when the governing body was enlarged from the original three members, first to five, and then to a nine-man council. We tried adding extra tables in the councilroom but wound up by forcing some of the councilmen to sit with their backs to the residents attending the meeting.

We looked around among furniture manufacturers. They quoted prices of $1,200 to $1,500 for a suitable arc-shaped table that probably would be all right for a large corporation with lots of non-voting stockholders. But it certainly is not suitable for a relatively small township with citizens who vote and take a lively interest in local affairs.

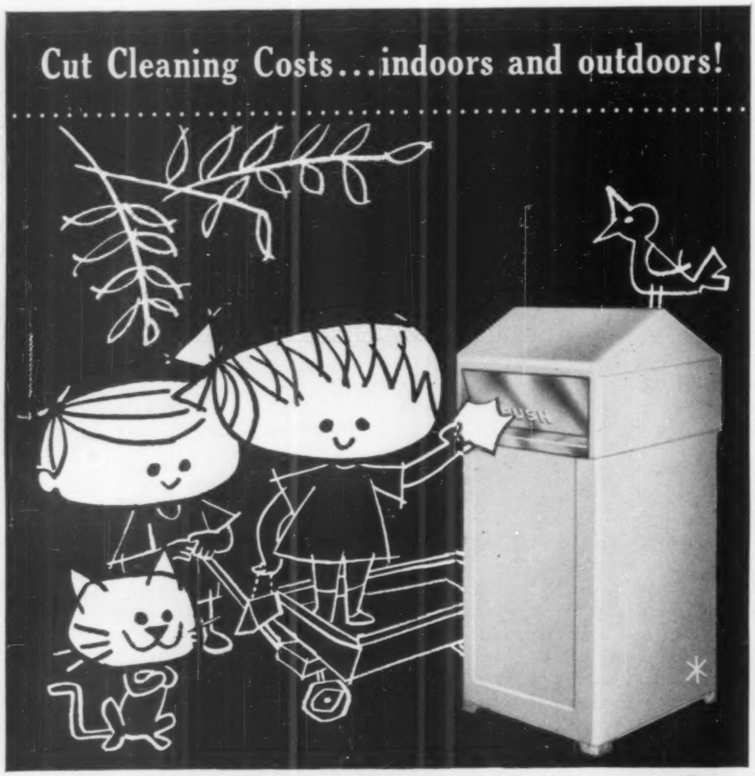
At this point, Councilman Vliet offered to build the table himself. A few days before Christmas, he purchased the lumber and hardware, and started work in the basement of his home. After putting in 50 working hours, he completed the table, ready for staining and finishing. At this point he called in his colleagues for a wind-up work party.

The table is big, rugged and impressive. It is 20 feet long, 40 inches wide and built entirely of hardwood. Its curved shape permits it to fit into an 18-foot space, allowing councilmen to talk freely one to another, and at the same time face their constituents.

Councilman Vliet polishes the table he made for the council meetings while Mayor Leonard H. Ruppert admires his craftsmanship.

The table is strong enough to hold the "weightiest" of problems that the township may face. In fact, Councilman Vliet asserts that 20 men can stand on this table and not cause it to sag in the slightest.

William A. Sommers
Franklin Township Manager
Middlebush, N. J.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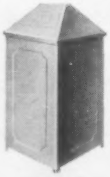

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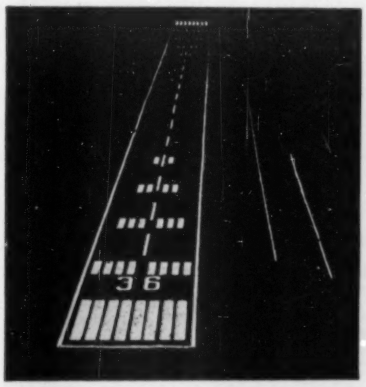
New Runway Markings

A reflective aggregate for runways, taxi strips and other airport pavements to make them brightly visible at night to approaching pilots is being tried out at Pinellas County Airport, St. Petersburg, Fla. The application is new and an assessment of its benefits will not be available for another year but these are the details of the application.

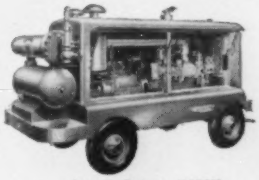
The material, "Scotch-Rok" reflective aggregate, is composed of fine granular particles treated with a material which vividly reflects the landing lights of airplanes, providing pilots with depth guidance and a path of light on which to land. It is visible at night on the approach of an unlighted runway from two miles, at an altitude of 500 feet, according to engineers of Minnesota Mining and Manufacturing Co., St. Paul, Minn.

The reflective granules and binder were laid down with a Kelly-Creswell traffic striping machine on 8,000 square feet of the asphalt runway. The reflective granules were applied to the two outside thresholds on each end of the runway, every other "dash" in the skip-line down the middle, and to the numerals "4" on the one end and "22" at the other.

The four *inside* thresholds on each end of the runway were reflectorized with "Centerlite" premix compound. This last application affords a means of comparison on durability and reflectivity as time goes on. "Scotch-Rok" granules used were 9130 white. The airport maintenance people have 9131 yellow on hand for taxi strips and other airport areas. ◄◄



An artist's conception of a runway application of Scotch-Rok reflective aggregate points up its visibility to aircraft.


Trenching 7 miles of street, this Jaeger "125" Roto ran two 80 lb. breakers to line-cut and break a 7" top of asphalt over brick—averaged 1200 sq. ft. per 8 hr. day—used only 1½ gals. of fuel per hr.

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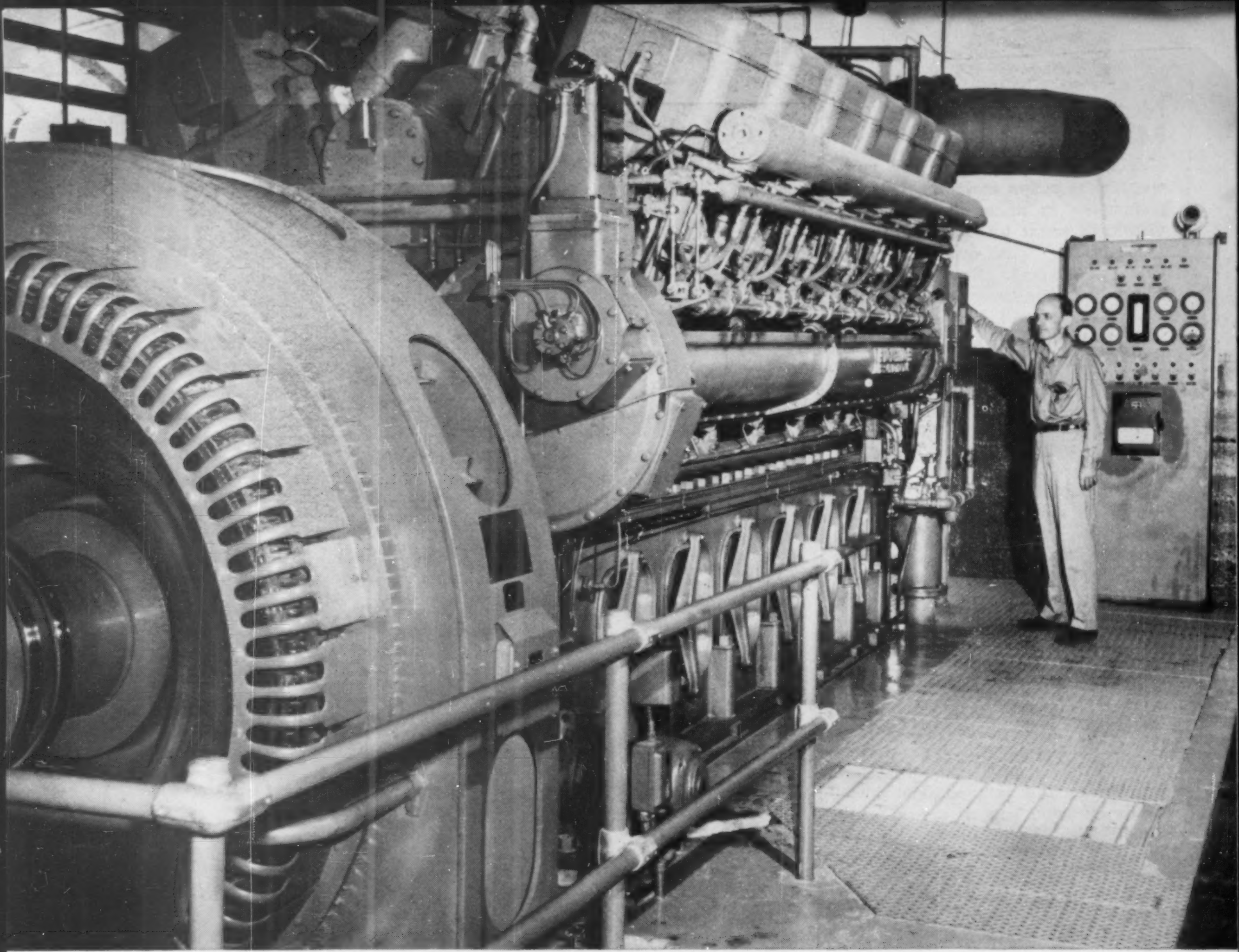

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The new Nordberg Duafuel engine in the Bethany, Missouri, municipal power plant may have to wait a year or more before it can demonstrate its economy potential with natural gas fuel. But while waiting for gas to become available, the Supairthermal® engine is operating as an oil-burning diesel and establishing new standards of efficiency and economy for the plant. *In its first twelve months of service, the new unit has produced better than 14 kilowatt-hours per gallon of fuel consumed, though operating with a load that averaged just 60 percent.*

The municipal power plant at Bethany has a long record of successful operation. Its history may be traced through two early steam plants to today's low cost diesel operation.

At present the plant has four diesel engine-generator units; a 600 hp unit installed in 1929, a 1000 hp unit installed in 1946 and a 1600 hp unit installed in 1948. The new 2460 hp Nordberg, installed in November, 1958, replaced an old, low horsepower engine and was installed in the same building and on the same foundation area that held the older engine.

Kenneth Danford, Superintendent of Utilities at Bethany, Missouri, proudly describes his new V-12 Nordberg Supairthermal engine as "*compact, efficient and dependable.*" The efficiency and economy of this unit are now a matter of record.

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P460

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ZONING AND PLANNING NOTES

Edited by NORMAN WILLIAMS, Jr.

Parochial School in Residence District

NEW JERSEY. *Andrews* v. *Board of Adjustment of the Township of Ocean,* 152 (Atlantic (2d) 580 (Supreme (highest) Court, June 30, 1959).

A large mansion, erected in 1900, was located on a 16-acre tract in a district zoned for acreage lots, but adjacent to a residence district zoned for smaller lots. The applicable zoning regulations permitted apartment houses, boarding houses, and various types of community facilities by a special permit, but provided that private schools, including parochial schools were permitted only in business districts, again only under a special permit. A variance was granted to permit a parochial school (with teachers' living quarters) in the mansion, under one of the peculiar New Jersey statutory provisions governing variances, which requires (a) a showing of "special reasons," and (b) a showing that the variance "can be granted without substantial detriment to the public good and will not substantially impair the intent and purpose of the zone plan and zoning ordinance." The variance was upheld in court.

In the opinion the Court first held that a school involved no detriment to the public good, and no substantial impairment of the intent of the zoning plan. In this connection it was noted that, as indicated above, the zoning regulations provided for a substantial number of uses other than single-family houses, so that traffic-generating facilities were not necessarily excluded by the zoning scheme. The opinion then turned its attention to the meaning of the phrase "special reasons" under the New Jersey Zoning enabling act. After reviewing the rather considerable number of New Jersey cases arising under this provision, the Court held that a showing of hardship was not required thereunder. The phrase "special reasons" was interpreted in the light of the general purposes of zoning stated in the enabling act, particularly "general welfare"; and the provision of a parochial school was held to serve the general welfare. The fact that the proposed school would serve an area larger than a township was held to be of no significance in this case. Finally, the court—while not passing on the question—indicated that there might be valid reasons for differential treatment between private and parochial schools. On this point the court's attitude deviated from the general run of American case law.

> "We express no view of the constitutional issue since it is not necessarily involved. No doubt a municipality may legislatively determine to include public and private schools in a single category for zoning purposes, and Yanow approves that course. But there are differences which may well support another approach. In weighing its obligation to provide public education against some ensuing hurt to residential property, a municipality may decide to accept some detriment in order to furnish such education with reasonable convenience to the several areas of the community. It may, however, be proper to strike a different balance when weighing a detriment to a residential district against the need for a private school which draws its students from the entire community or from beyond its borders. Moreover, the governmental unit is politically responsible to the public for its selection of a school site and hence is alert to the various facets of public interest involved in its decision. If need be, it may resort to eminent domain to secure the appropriate location. On the other hand, a private school may not have an equivalent sense of obligation to consider the interests of others and in any event is limited to parcels available to it by voluntary sale. We need not and hence do not express an opinion upon the question."

One judge dissented, on the ground that the vague language in the present New Jersey enabling legislation should not be interpreted as superseding the requirement (deriving from the pre-existing law) of a showing of hardship as a basis for a variance.

Public Utilities in Residence District

NEW YORK. *Niagara Mohawk Power Corporation* v. *City of Fulton,* 188 New York Supplement (2d) 717 (Appellate Division (intermediate) Court, July 9, 1959).

The Niagara Mohawk Power Corporation sought to build an electric substation in a residence district. After a complex series of legal proceedings, the Court here held that the denial of a variance for this purpose was obviously correct, since

> "The practical difficulty and unnecessary hardship referred to in the ordinance relate to the inability of the owner to use the land for a permitted purpose, not to the plight of a prospective purchaser who seeks to use it for a non-conforming use and who is unable to find any site within the area in which he desires to build upon which the proposed use would be permitted. Since there was no proof in this case that the site could not be used for residential purposes, there was no power in the Board to grant a variance."

The Court then held that the City's zoning power was subject to the higher authority of the State's statute authorizing a public utility to establish service facilities where needed. In this connection, however, the Court held that

> "While the proof before the Board was sufficient to establish that it was necessary for the petitioner to build a sub-station in the residential area, the proof was not sufficient to demonstrate that it was necessary for the petitioner to build its sub-station upon the particular site which it had selected. No proof was offered by the petitioner of the unavailability of other sites which might cause less disruption of the community zoning plan or might cause less detriment to neighboring property but which at the same time could serve the public need with reasonable adequacy. A zoning ordinance which has the effect of barring a public utility company from building upon a particular site cannot be declared invalid unless it is demonstrated that it was reasonably necessary for the company to build upon that site in order to enable it to render safe and adequate service. In determining the reasonable necessity of the use of a particular site, consideration must be given to the availability of other sites and to the degree of detriment to the neighborhood which might be caused by the various sites as weighed against their comparative advantages from the standpoint of efficiency and safety of operation. Tested by that standard, the proof in this case was not sufficient. There was proof that the site selected was the 'ideal' one from the standpoint of operating efficiency but there was no proof that any consideration had been given to the other factors."

The local ordinance had failed to make any provision for a special permit for necessary utility structures in residence districts; and the Court held that in such a situation the courts had to deal with the situation as best they could. In view of the inadequacy of proof here, the Court refused to hold the ordinance invalid for lack of such a provision.

Apartment Project In Single-Family Area—Required Frontage

OHIO. *Denman* v. *City of Cincinnati,* 159 North Eastern (2d) 800 (Court of Common Pleas (lower court), November 6, 1958), reversed, 159 North Eastern (2d) 805 (Court of Appeals (intermediate court), January 12, 1959), appeal dismissed, 168 Ohio State 515, 156 North Eastern (2d) 314 (Supreme (highest) court).

The residence B District regulations in the Cincinnati zoning ordinance were amended in 1949 to permit row houses or garden-type apartments, as well as four-family houses, in certain types of situations. In this case seven apartment buildings (with 10 or 11 dwelling units each) were proposed on a 6-acre tract adjacent to an established single family subdivision; and the proceedings were challenged by the adjoining owners, first on the theory that the amendment permitting multiple housing in such a district was invalid, and second because of an allegedly invalid dedication of the only adjoining public street. There was also a question as to the existence of as much frontage on a public street as required under the ordinance.

In the lower court opinion, the Court —after reviewing the history of the proceedings—held that the amendment to the zoning ordinance, and its application to this area, was not so clearly unreasonable as to warrant judicial interference. However, the Court noted that the parcel involved did not have sixty feet of frontage on a public street paved to a width of sixteen feet, as required under the ordinance for a project like the one proposed; and the project was therefore disapproved on this ground.

On appeal, the intermediate Ohio appellate court held that the dedication (without improvement) of a ten-by-sixty foot strip at the end of the lane was sufficient to overcome the technical objection on lack of frontage and access—and therefore that the project could properly be built in this area.

LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Airport Auto-Rental Concession Upheld

In action concerning contract between city and automobile rental company respecting concession for service at city-owned-and-operated airport, held contract valid and not subject to competitive bidding requirements. *People* v. *Daley,* 159 N.E.2d 18 (Ill. App., June 2, 1959)

Airports—Landing Accident—Manager Not Liable

In action, arising out of landing accident where plane collided with unmarked windrow of sand beyond edge of runway, against city and lessee of airport, who also served as airport manager, held city not liable and with respect to unleased portion of airport manager was agent of city and also not liable. *Barovich* v. *City of Miles City,* 340 P.2d 819 (Mont., June 18, 1959)

Annexation—Obligations Imposed on New Area Valid

Where home rule city annexed adjacent area and imposed city charter, existing ordinances and city bonded debt on annexed land owners without consent of such owners, held this procedure not denial of due process. *State* v. *City of Harlingen,* 324 S.W.2d 248 (Tex. Civ. App., April 15, 1959)

Attorneys—Termination of Services Upheld

Where statute required enactment of ordinance to establish office of borough attorney and one was appointed by resolution which was subsequently repealed, held that person could acquire no rights to be borough attorney. *Wagner* v. *Borough of Lodi,* 152 A.2d 389 (N. J. Super. Ct., App. Div., June 15, 1959)

Boats—Village Lacks Power to License

In prosecution for operating boat without license as required by village ordinance, held although village had implied power to regulate boating on lakes within its boundaries it did not have power to license boats using such lakes. *Village of Brooklyn Center* v. *Rippen,* 96 N.W.2d 585 (Minn., May 15, 1959)

City Officers—Conflict of Interests—Holding of Stock Upheld

Held, that under city charter provision dealing with conflicts of interest, it shall not be construed to prohibit officer from holding stock in any corporation provided that such stockholding does not create conflict with his official duties. *Gilmartin* v. *City of New York,* 190 N.Y.S.2d 967 (N.Y. Sup. Ct., N. Y. Cty., July 31, 1959)

Civil Rights—Separate Waiting Rooms Sanctioned

Complaint should be dismissed where there was no allegation that anything complained of was done under color of a specified state law, and there was no allegation that waiting room facilities for Negroes at airport were inferior to those furnished for white citizens. *Henry* v. *Greenville Airport Commission,* 175 F Supp. 343 (S. C., Aug. 5, 1959)

Comic Book Ordinance Invalid

In action concerning county ordinance prohibiting sale or circulation of "crime" comic book to child under age 18, held ordinance violates provision guaranteeing free press, equal protection and due process of law. *Katzev* v. *County of Los Angeles,* 341 P.2d 310 (Calif., June 24, 1959)

Drunken Driving—Erroneous Instruction—Conviction Upheld

In action relating to refusal to give defendant's requested instruction in drunken driving charge concerning jury's duties to decide whether to believe alcometer test or contradictory evidence, held this was not reversible error in view of other instructions given. *City of Wichita* v. *Depee,* 340 P.2d 924 (Kan., June 13, 1959)

Garbage Collection "Governmental Function"

In action by city employee for back injuries sustained while lifting trash onto department of sanitation trash and garbage truck, held city engaged in governmental function and not liable. *Robinson* v. *City of Hereford,* 324 S.W.2d 313 (Tex. Civ. App., May 18, 1959)

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Garbage— Exclusive Collection Franchise Upheld

In action between county rubbish contractors' association, county and company to which county board granted exclusive garbage removal franchise involving validity of franchise, held franchise valid. *Broward County Rubbish Cont. Ass'n.* v. *Broward County,* 112 So.2d 898 (Fla. App., April 1, 1959)

Gross Receipts Tax On Foreign Sales Representative Valid

In action by out-of-town manufacturer's individual sales representatives to enjoin city from enforcing flat sum gross receipts taxes and license taxes against supervisor and representatives, held taxes valid. *Armstrong* v. *City of Tampa,* 112 So.2d 293 (Fla. App., May 8, 1959)

Industrial Development— Condemnation For Invalid

In action relating to condemnation of land being used for agricultural and residential purposes to create industrial development districts, held such action was a taking of land by eminent domain for private purposes and therefore invalid. *Hogue* v. *Port of Seattle,* 341 P.2d 171 (Wash., June 11, 1959)

Milk—License and Inspection Fees Valid

In action by milk producers to enjoin enforcement of ordinance establishing license and inspection fees to be paid for selling milk in city, held ordinance valid since fees not more than reasonably necessary to cover cost of inspection. *Producers Ass'n of San Antonio* v. *City of San Antonio,* 326 S.W.2d 222 (Tex. Civ. App., June 10, 1959)

Nuisance—Erection of TV Antenna Near Residence Upheld

In action against television company to enjoin erection of tower on land adjacent to residences brought shortly after construction was begun, held since at this point injunction would bring greater hardship on company than landowner injunction denied. *Steele* v. *Queen City Broadcasting Company,* 341 P.2d 499 (Wash., June 2, 1959)

Off-Street Parking—Use of Lot for Parking by Owner Not Bar to Condemnation

Provision in enabling act prohibiting city from condemning for off-street parking property that has been used more than one year by owner for that purpose is invalid and of no effect. *Simmons* v. *City of Cleveland Heights,* 160 N.E.2d 677 (Ohio C.P., Cuyhoga Cty., April 29, 1959)

Parking—Violation— Prima Facie Guilt of Owner Upheld

Where ordinance provided that if any vehicle was found parked in violation of ordinance and driver could not be determined, owner should be held prima facie responsible for such violation, held ordinance valid. *City of Columbus* v. *Webster,* 159 N.W.2d 466 (Ohio App., Franklin Cty., Dec. 9, 1958)

Solicitors—Green River— One Visit Not "Practice" of Soliciting

In action concerning Green River ordinance prohibiting "practice" of going on private residences for purposes of selling goods, held defendant not guilty of violation based on single act of soliciting orders for bakery products at one residence. *City of Defiance* v. *Nagel,* 159 N.E.2d 791 (Ohio App., Defiance Cty., Feb. 13, 1959)

Trailer Court Regulations Upheld

Where town board adopted ordinance regulating trailer camps in accordance with statute setting standards for such regulation, held ordinance valid even though board failed to comply with earlier general zoning statute. *David A. Ulrich, Inc.* v. *Town of Saukville,* 96 N.W.2d 612 (Wis., May 5, 1959)

Truck Route—Ban on City Streets Invalid

Ordinance prohibiting operation of trucks in excess of 12 tons gross weight on city streets unreasonable due to fact that no route was open to plaintiff's quarry other than one through town. *Neary* v. *Town of Los Altos Hills,* 343 P.2d 155 (Cal., Aug. 10, 1959)

Utilities—Perpetual Easement Granted Telephone Company

Where telephone company secured rights to occupy city streets and alleys with lines prior to statute empowering cities and towns to grant franchises, held company had perpetual easement. *City of Emmetsburg* v. *Central Iowa Telephone Co.,* 96 S.W.2d 445 (Iowa, May 5, 1959)

Workmen's Compensation— Garbage Collector Not Covered

In proceeding concerning city employee who sustained injury while in performance of duty of collecting grabage, held employee not within coverage of Workmen's Compensation Act. *Oklahoma City* v. *Terhune,* 338 P.2d 884 (Okla., April 28, 1959)

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RECENT CITY MANAGER APPOINTMENTS

James L. Juhl
Durand, Mich.

John R. Alspach
Toledo, Ohio

W. E. Lawrence
Provincetown, Mass.

R. D. Pulscher
Coon Rapids, Minn.

G. L. Young
Northfield, Vt.

W. C. Wingate
Jacksonville Bch., Fla.

John R. Alspach, county engineer of Lucas Co., Ohio, was recently appointed as manager of Toledo, Ohio, succeeding Russell W. Rink. Mr. Alspach previously served as director of public service in Toledo.

Douglas W. Ayres, employed by Public Administration Service, Chicago, Ill., was recently appointed as manager of Melbourne, Fla., succeeding Tevis Huguely. Mr. Ayres has previously served as town clerk and general assistant to the manager of Salem, Va.

Ernest E. Brashear, public relations officer of Burbank, Calif., was recently appointed to the post of manager of Seal City, Calif.

Winton S. Burne, assistant administrative officer of Norwalk, Calif., was recently appointed as the first manager of Mirada Hills, Calif. Mr. Burne has previously served as field consultant for Los Angeles County, Calif.

Calvin A. Canney, administrative intern at Alameda, Calif., was recently appointed manager of Bar Harbor, Me., succeeding Ralph F. W. Eye, now manager of Salem, N. H.

Edward J. Connell, chief administrative officer of Rocky River, Ohio, was recently appointed as the manager of Provo, Utah, succeeding E. Earl Udall, now manager of Merced, Calif. Mr. Connell previously served as administrative assistant of Cleveland Heights, Ohio.

L. M. Crow, Jr., manager of Grand Prairie, Tex., was recently appointed manager of Brownsville, Tex., succeeding Gene Gatlin. Mr. Crow previously served as manager of Harlingen, Tex.

Norman T. Dawe, assistant general manager of Westmount, Quebec, Canada, was recently appointed as manager of that city, succeeding Thomas J. Hughes, who retired.

Ralph F. W. Eye, manager of Bar Harbor, Me., was recently appointed manager of Salem, N. H. Mr. Eye previously served as manager of Searsport, Me.

Robert A. Finley, manager of Adrian, Mich., was recently appointed manager of Mt. Lebanon, Pa., succeeding John A. Paulus, now manager of Rye, N. Y. Mr. Finley previously served as manager of La Grange, Ill.

William L. Fuller, water office manager of Abilene, Tex., was recently appointed manager of Monahans, Tex., succeeding Morris M. Howard, now manager of Irving, Tex.

Calvin H. Gibson, retired Air Force colonel, was recently appointed manager of Mission, Tex., succeeding Alex R. Judkins.

James D. Harrelson, city engineer of South Boston, Va., was recently appointed as the first manager of Victoria, Va.

Rufus C. Johnson, a consulting engineer, was recently appointed as manager of Douglas, Ga., as the successor to Louis H. Cook.

James L. Juhl, administrative assistant in Huntington Woods, Mich., was recently appointed manager of Durand, Mich., succeeding Boyd K. Benedict. Mr. Juhl was also administrative assistant in Birmingham, Mich.

J. E. Keaton, administrative assistant at Midland, Tex., was recently appointed manager of Colorado City, Tex., succeeding Rollin K. Snethen, now the manager of Corsicana, Tex.

Lawrence A. Kenyon, city engineer of Marysville, Mich., was recently appointed manager of Grinnell, Iowa, succeeding George C. Merkel, now manager of Middletown Borough, Pa.

Donald L. Kohler, assistant city manager and budget officer of Grand Haven, Mich., was recently appointed the first manager of Boyne City, Mich. Mr. Kohler served as administrative assistant and personnel director of Eugene, Ore.

Walter E. Lawrence, formerly manager of Saugus, Mass., for four years, has been recently appointed as the new manager of Provincetown, Mass., succeeding James V. Coyne. Mr. Lawrence formerly served as mayor of Medford, Mass.

Lawrence W. Larson, controller of Arcadia, Calif., for the past four years, was recently appointed as the manager of Petaluma, Calif., succeeding Ed Frank, now manager of Daly City, Calif. Mr. Larson previously served as director of finance, Council Bluffs, Iowa.

Aaron Marsh, manager of Florence, S. C., was recently appointed manager of Hamilton, Ohio, succeeding Howard Wilson. Mr. Marsh has previously served as manager of Gulfport, Fla.

Guy L. McCraw, director of finance of Grand Prairie, Tex., was recently appointed manager of that city, succeeding L. M. Crow, Jr., now manager of Brownsville, Tex. Mr. McCraw previously served as manager of Littlefield and Greenville, Tex.

Robert D. Pulscher, assistant to the city manager in Sioux City, Iowa, has been appointed as manager of Coon Rapids, Minn., succeeding L. B. Mason.

Roger R. Rehberg, office manager for a private business in Oak Park, Mich., was recently appointed manager of Reed City, Mich., succeeding Albert J. Falvo, now manager at Willard, Ohio. Mr. Rehberg previously served as assistant to the manager of Brighton, Mich.

Clarence E. Robinson, manager of Orrington, Me., was recently appointed as manager of Ellsworth, Me., succeeding Elton M. Rich. Mr. Robinson has previously served as manager of Ashland, N. H., Belle Glade, Fla., and Clifton and Fairfield, Me.

Louis J. Smitzes, manager of El Campo, Tex., was recently appointed the first manager of Boynton Beach, Fla. Mr. Smitzes previously served as the manager of Rosebud, Tex.

Ben Veltri, previously a Colorado State Senator and in private business, was recently appointed manager of Trinidad, Colo., succeeding K. W. Kissick.

Mrs. Herbert Ward, town treasurer of Tazewell, Va., for the past 12 years, was recently appointed manager of that town, succeeding Jack F. Neel, now manager of Roxboro, N. C.

Wilson C. Wingate, acting manager of Jacksonville Beach, Fla., is now manager of that city, succeeding Buford McRae.

Leon A. Wurl, director of public works of Westminster, Colo., was recently appointed as the first administrator of Aspen, Colo.

George L. Young, manager of Cavendish town and Cavendish village, Vt., has been appointed manager of Northfield town and Northfield village, Vt., succeeding John Wolfenden. Mr. Young has also been manager of South Berwick, Me.

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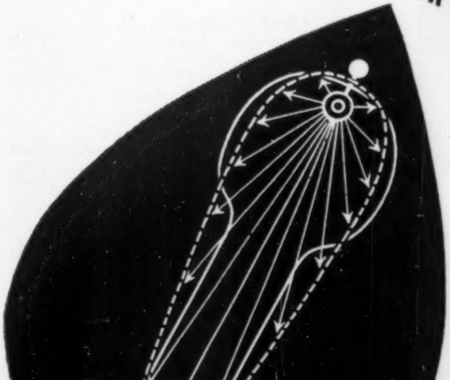

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CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

July 18-22—San Francisco, Calif.
NATIONAL ASSOCIATION OF SANITARIANS. Annual Meeting (Jack Tar Hotel), Sec., Nicholas Pohlit, c/o Univ. of Denver, Denver 10, Colo.

July 24-26—Atlanta, Ga.
GEORGIA MUNICIPAL Assoc. Annual Meeting (Biltmore Hotel). Exec. Dir., W. E. George, 406 Fulton, Federal Bldg., Atlanta 3, Georgia.

Aug. 10-12—University Park, Pa.
PENNSYLVANIA SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Penna. State University). Sec.-Treas., J. R. Harvey, 996 So. Main St., Meadville, Pa.

Aug. 14-17—Miami Beach, Fla.
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Meeting (Hotel Fontainebleau). Exec. Dir., Bernard F. Hillenbrand, 1001 Connecticut Ave., N. W., Washington 6, D. C.

Aug. 14-17—New York, N. Y.
AMERICAN PUBLIC WORKS ASSOC. Annual Convention (Manhattan Hotel and New York Coliseum). Exec. Dir., Robert D. Bugher, 1313 E. 60 St., Chicago 37, Ill.

Aug. 14-19—Boston, Mass.
NATIONAL SHADE TREE CONFERENCE. Annual Meeting (Statler-Hilton Hotel). Sec., L. C. Chadwick, Dept. of Horticulture, Ohio State Univ., Columbus 10, Ohio.

Aug. 31-Sept. 2—Huron, So. Dakota
SOUTH DAKOTA MUNICIPAL LEAGUE. Annual Meeting (Marvin Hughut Hotel). Exec. Dir., J. G. Barger, P. O. Box 938, Aberdeen, South Dakota.

Sept. 5-9—New York, N. Y.
NATIONAL TAX ASSOC. Annual Meeting (Statler-Hilton Hotel). Dir., Walter J. Kress, 905 Payne-Shoemaker Bldg., Harrisburg, Pa.

Sept. 5-9—Colorado Springs, Colo.
INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS. Annual Conference (Broadmoor Hotel). Mgr. Dir., Hal Colling, 610 South Broadway, Los Angeles 14, Calif.

Sept. 7-9—Watertown, So. Dakota
SOUTH DAKOTA WATER & SEWAGE WORKS CONEFRENCE. Annual Conference (Grand Hotel). Sec.-Treas., Don C. Kalda, State Dept. of Health, Pierre, So. Dak.

Sept. 11-15—Long Beach, Calif.
AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Convention (Lafayette Hotel). Exec. Sec., Alfred B. LaGasse, Oglebay Park, Wheeling, W. Va.

Sept. 11-16—Pittsburgh, Pa.
ILLUMINATING ENGINEERING SOCIETY. National Technical Conference (Penn-Sheraton Hotel). Managing Dir., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

Sept. 12-14—Knoxville, Tenn.
AMERICAN WATER WORKS ASSOC.—Kentucky-Tenn. Section. Annual Meeting (Andrew Jackson Hotel). Sec.-Treas., Harold F. Mount, 5400 Preston Hwy., Louisville, Ky.

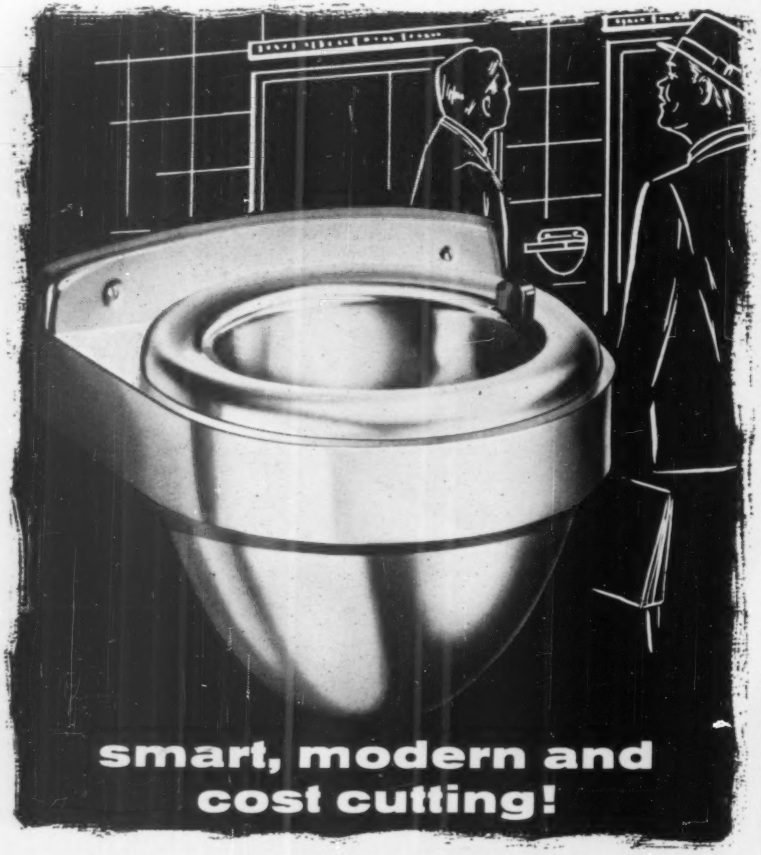
Sept. 12-15—Rochester, N. Y.
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Meeting (Manger Hotel). Dir., B. Richter Townsend, 232 Madison Ave., New York 16, N. Y.

Sept. 12-16—Chicago, Ill.
INSTITUTE OF TRAFFIC ENGINEERS. Annual Meeting (Edgewater Beach Hotel). Exec. Sec., David M. Baldwin, 2029 K St., N.W., Washington 6, D. C.

Sept. 14-16—St. Joseph, Mo.
MISSOURI MUNICIPAL LEAGUE. Annual Convention (Robidoux Hotel). Exec. Dir., Bruce J. Carl, Guitar Bldg, Columbia, Missouri.

Sept. 14-16—Saranac Inn, N. Y.
AMERICAN WATER WORKS ASSOC.—N. Y. Section. Annual Meeting (Saranac Inn). Sec.-Treas., Kimball Blanchard, c/o Neptune Meter Co., 22-22 Jackson Ave., Long Island City, N. Y.

Sept. 14-16—Virginia Beach, Va.
AMERICAN WATER WORKS ASSOC.—Virginia Section. Annual Meeting (Cavalier Hotel). Sec., E. H. Ruehl, c/o R. Stuart Royer & Assoc., 15 W. Cary St., Richmond, Va.



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UTAH MUNICIPAL LEAGUE. Annual Meeting (Newhouse Hotel). Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

Sept. 18-21—York, Pa.
PENNSYLVANIA LEAGUE OF CITIES. Annual Meeting (Yorktowne Hotel). Exec. Dir., J. N. O'Neil, 506 State St., Bldg., Harrisburgh, Pa.

Sept. 18-21—Denver, Colo.
INTERNATIONAL ASSOC. OF ASSESSING OFFICERS. Annual Meeting (Hilton Hotel). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago, Ill.

Sept. 18-22—Montreal, Canada
NEW ENGLAND WATER WORKS ASSOC. Annual Meeting (Queen Elizabeth Hotel). Sec., Joseph C. Knox, 73 Tremont Street, Boston 8, Mass.

Sept. 18-20—Wichita, Kansas
LEAGUE OF KANSAS MUNICIPALITIES. Annual Convention (Hotel Broadview). Exec. Dir., E. A. Mosher, 112 West 7th, Topeka, Kansas.

Sept. 18-20—Roanoke, Va.
LEAGUE OF VIRGINIA MUNICIPALITIES. Annual Meeting (Roanoke Hotel). Exec. Sec., Harold I. Baumes, 905 Travelers Bldg., Richmond 19, Virginia.

Sept. 19-21—Atlanta, Ga.
NATIONAL CONFERENCE FOR COUNTY ENGINEERS AND OFFICIALS. Annual Meeting (Atlanta Biltmore Hotel.) Dir., Ben F. Ostergren, County Division, ARBA, 600 World Center Bldg., Washington 6, D. C.

Sept. 19-22—New York, N. Y.
INTERNATIONAL MUNICIPAL SIGNAL ASSOC. Annual Conference (Hotel Astor). Sec., Irvin Shulsinger, 130 West 42nd St., New York 36, N. Y.

Sept. 19-23—Boston, Mass.
NATIONAL MUNICIPAL CEMETERY CONFERENCE. Annual Meeting (Statler Hotel). Sec., Vernon J. Birkhimer, Bureau of Cemeteries, 4809 W. Franklin St., Richmond 26, Va.

Sept. 20-23—Grand Rapids, Mich.
MICHIGAN MUNICIPAL LEAGUE. Annual Meeting (Pantlind Hotel). Dir., John H. Huess, 205 South State St., Ann Arbor, Michigan.

Sept. 20-23—Minneapolis, Minn.
UNITED STATES CIVIL DEFENSE COUNCIL. Annual Meeting (Lexington Hotel). Sec., Elliott R. Jackson, Municipal Auditorium, Atlanta 3, Georgia.

Sept. 21-23—Traverse City, Mich.
AMERICAN WATER WORKS ASSOC.—Michigan Section. Annual Meeting (Park Place Hotel). Exec. Sec., T. L. Vander Velde, Dept. of Health, Lansing 4, Mich.

Sept. 21-23—Sioux Falls, So. Dakota
AMERICAN WATER WORKS ASSOC.—North Central Section. Annual Meeting (Sheraton & Cataract Hotels). Exec. Sec., Carl A. Flack, St. Paul Water Dept., 216 Courthouse, St. Paul 2, Minn.

Sept. 21-23—Cincinnati, Ohio
OHIO MUNICIPAL LEAGUE. Annual Meeting (Sheraton-Gibson Hotel), Exec. Dir. J. P. Coleman, 60 East Broad Street, Columbus 15, Ohio.

Sept. 25-27—Jefferson City, Mo.
MISSOURI SEWAGE & INDUSTRIAL WASTES ASSOC. Annual Meeting (Hotel Governor). Sec.-Treas., W. A. Kramer, Div. of Health, State Office Bldg., Jefferson City, Missouri.

Sept. 25-28—Palo Alto, Calif.
NATIONAL ASSOC. OF TAX ADMINISTRATORS. Annual Meeting (Rickey's Studio Inn). Exec. Sec., Charles F. Conlon, 1313 East 60th St., Chicago 37, Ill.

Sept. 25-28—Philadelphia, Pa.
PENNSYLVANIA MUNICIPAL AUTHORITIES Assoc. Annual Meeting (Ben Franklin Hotel). Sec., Chas. F. Beeduber, 506 State St. Bldg., Harrisburg, Pa.

Sept. 25-29—Denver, Colo.
NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICIALS. Annual Meeting (Brown Palace). Exec. Sec., Charles S. Rhyne, 839 17th St., N.W., Washington 6, D. C.

Sept. 26-30—Washington, D. C.
NATIONAL RECREATION CONGRESS. Annual Convention (Shoreham Hotel). Sec., Willard B. Stone, 8 W. 8th St., New York.

Sept. 28-30—Prince Edward Is., Can.
AMERICAN WATER WORKS ASSOC.—Canadian Section-Maritime Branch. Annual Meeting. (Charlottetown Hotel). Sec., J. D. Kline, P. O. Box 608, Halifax, Nova Scotia, Canada.

Sept. 28-30—Madison, Wis.
AMERICAN WATER WORKS ASSOC.—Wisconsin Section. Annual Meeting (Loraine Hotel). Exec. Sec., Harry Breimeister, Utilities Engr., City of Milwaukee, 607 Municipal Bldg., Milwaukee 2, Wisconsin.

(Continued on page 186)

POWERFUL, NEW
M&M BRUSH CHIPPER
handles limbs up to
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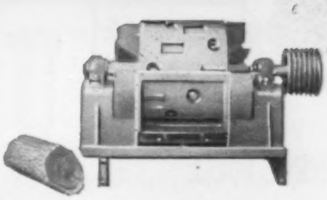

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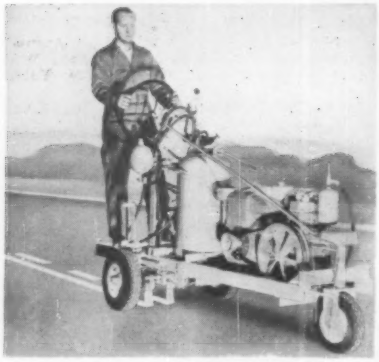
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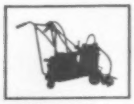
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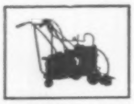
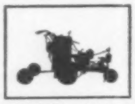

MODEL 401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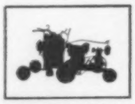
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Conventions—When and Where

(Continued from page 185)

Oct. 1-4—Springfield, Ill.
Illinois Municipal League. Annual Meeting (Leland Hotel). Dir., A. L. Sargent, 537 South 4th Street, Springfield, Ill.

Oct. 2-4—Galveston, Texas
Texas Municipal League. Annual Meeting (Galvez and Buccaneer Hotels). Dir., Steve Matthews, 402 Vaughn Bldg., Austin 1, Texas.

Oct. 2-6—Detroit, Mich.
National Association of Housing and Redevelopment Officials. Annual Meeting (Statler-Hilton Hotel). Exec. Dir., John O. Lange, 1313 E. 60th St., Chicago, Ill.

Oct. 2-6—Washington, D. C.
International Association of Chiefs of Police. Annual Meeting (Hotel Statler). Exec. Sec., Leroy E. Wike, Mills Bldg., Washington 6, D. C.

Oct. 2-6—Philadelphia, Pa.
Water Pollution Control Federation (formerly the Federation of Sewage and Industrial Wastes Associations). Annual Meeting (The Trade & Convention Center). Exec. Sec., Ralph E. Fuhrman, 4435 Wisconsin Ave., N.W., Washington 16, D. C.

Oct. 2-9—Montevideo, Uruguay
Inter-American Association of Sanitary Engineering. Annual Meeting (Hotel Carrasco). Sec. Gen., F. W. Montanari, 414 Walnut Street, Room 302, Cincinnati 2, Ohio.

***Oct. 5-7—Bismarck, No. Dakota**
North Dakota Water & Sewage Works Conference. Annual Conference (Grand Pacific Hotel). Sec.-Treas., W. Van Heuvilen, Capital Bldg., Bismarck, No. Dakota.

***Oct. 9-11—Charlotte, N. C.**
North Carolina League of Municipalities. Annual Meeting (Ovens Auditorium & Charlotte Coliseum). Exec. Dir., Mrs. Davetta L. Steed, 1009 Raleigh Building, Raleigh, North Carolina.

***Oct. 9-12—Washington, D. C.**
National Assoc. of Housing Redevelopment Officials. Annual Conference (Sheraton-Park Hotel). National Association of Redevelopment Officials, 1313 E. 60th St., Chicago 37, Ill.

***Oct. 9-12—Birmingham, Ala.**
American Water Works Assoc.—Alabama-Mississippi Section. Annual Meeting (Tutwiler Hotel). Sec., Ernest Bryan, McWane Cast Iron Pipe Co., Box 2601, Birmingham, Ala.

***Oct. 11-14—Atlantic City, N. J.**
Eastern Water Company Conference (formerly Pennsylvania Water Works Assoc.). Annual Meeting (Chalfonte Hotel). Sec., R. L. Tyler, 1 Morgan Ave., Palmyra, N. J.

***Oct. 16-19—Galveston, Texas**
American Water Works Assoc.—Southwest Section. Annual Meeting (Galvez Hotel). Sec., Leslie A. Jackson, Municipal Water Works, Robinson Memorial Auditorium, Little Rock, Ark.

***Oct. 16-20—San Francisco, Calif.**
International City Manager's Assoc. Annual Meeting (Sheraton-Plaza Hotel). Exec. Dir., Orin E. Nolting, 1313 East 60th Street, Chicago 37, Ill.

MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Kentucky Studies Metro Government

First Report of the Advisory Committee on Metropolitan Government, Information Bulletin No. 25—*Legislative Research Commission, New Capitol Building, Frankfort, Kentucky.* 1959. 17 *pp.*

The Committee recommends with refreshing candor that the greatest obstacle to the modernization of local government in metropolitan areas is the Kentucky State Constitution. The Committee urgently recommends that it be revised. One of the rather cute portions of the Constitution is its requirement for incorporation. To be eligible, a city must have at least 125 people, and a square boundary, not over a half-mile on a side.

Annexation and Subdivision Control

A Guide to Annexation and Subdivision Control—*League of Iowa Municipalities, Institute of Public Affairs, University of Iowa, Iowa City, Iowa.* 1959. 52 *pp.* $1 *plus postage.*

A little pamphlet telling Iowa cities how to annex areas and how to control the growth of subdivisions within their boundaries. For non-Iowa use, the latter section is the more informative.

Capital Improvements

A Guide to Capital Improvement Programming in Connecticut—*Connecticut Development Commission, State Office Building, Hartford* 15, *Connecticut.* 1960. 76 *pp.*

An instructive manual that tells municipalities in the Nutmeg State how to plan their capital-improvement programs. Cities in other states will find it helpful also. It is a subject that needs discussion, not only in Connecticut but in 49 other states also.

Traffic Surveys for Smaller Cities

The Hollywood Plan: *A guide for conducting parking and traffic surveys for cities under* 35,000 *population—By Neno Spagna, Planning Director, City of Hollywood, Fla. Administrative Center, Hollywood, Fla.* 42 *pp.* $1.50.

This publication aims at helping smaller cities which do not have specialized personnel for this field. It is illustrated with 22 working drawings. The booklet shows how to use traffic counters and measure off-street parking. Following the plan may produce savings for cities in accumulating basic facts.

Citizen Analysis

The League Looks at Ferguson—*Office of the Mayor,* 110 *Church St., Ferguson* 35, *Mo.* 1960. 24 *pp.*

Ferguson, Mo., smartly and alertly took advantage of a penetrating—and favorable—study of its local government by the League of Women Voters. The way it is incorporated into the city's annual report makes it into something of a municipal classic.

Shopping Towns USA

Shopping Towns USA—*By Victor Gruen and Larry Smith. Reinhold Publishing Corporation,* 430 *Park Avenue, New York, N. Y.* 1960. 288 *pp.* $13.50.

This book is not written for city planners or administrators. It aims its message primarily at architects and builders. Nevertheless, it has certain messages that the municipal official may find interesting.

Chief among these is its analysis of parking needs. If city administrators analyze their downtown business districts, aiming at providing parking somewhat along these lines, they will enable their downtown areas to make the public forget about exotic-looking shopping areas. Someway or another, we feel that Mr. and Mrs. Average Citizen would like to shop where they feel confident that they are getting a bargain, not at a place that can't decide whether it is an art gallery or a park surrounded by high-priced retail shops.

(Continued on page 188)

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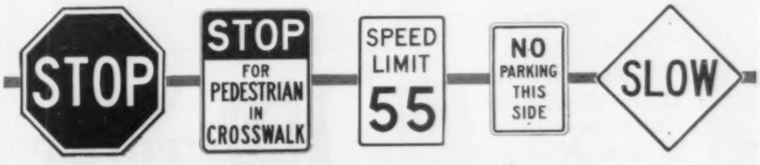

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(Continued from page 187)

Some of the comments in the book are curious. For example, the authors state on page 40 with remarkable casualness that it is not mandatory that a selected site be commercially zoned since in many cases it can be rezoned! Also, on p. 144, this reviewer at least rather likes the variety of store fronts that the authors label as "anarchy."

Zoning Boards

MODEL BY-LAWS, PROCEDURES AND FORMS FOR NEW JERSEY BOARDS OF ADJUSTMENT —*New Jersey State League of Municipalities, 603 Trenton Trust Building, Trenton, New Jersey.* 1959. 25pp. $1.

A hypothetical ordinance that creates a zoning board of adjustment for the imaginary town of Utopia, *New Jersey.* Perhaps it would not apply precisely to similar Utopias in California, Florida, Minnesota or any of the other states. Small communities might find it unwieldy. However, every city should find it helpful, if only for the series of appeal forms, if not for the ordinance itself.

Marina Needs

LAKEFRONT STUDY—*Regional Plan Commission, 415 The Arcade, Cleveland 14, Ohio.* 1960. 50 *pp.*

Cleveland makes a study of its recreational boating needs and finds that they are substantial. The report should be a helpful guide to many cities that face similar needs.

Aid for the Small Merchant

SUMMARY REPORT OF EAST JEFFERSON SHOPPING AREA SURVEY—*Mayor's Industrial and Commercial Development Committee, Office of the Mayor, City Hall, Detroit, Mich. 30 pp. Limited number available.*

While Detroit's exotic Eastland is its most famous and most highly publicized shopping area, Detroit's city government wants its minor shopping areas healthy also. This report gives some recommendations telling how.

Understanding Juvenile Delinquency

UNDERSTANDING JUVENILE DELIQUENCY—*By Lee R. Steiner. Chilton Company Book Division, 56th and Chestnut Sts., Philadelphia 39, Pa.* 1960. 199 *pp.* $3.95.

An interesting, fast-paced book written in a friendly, cheerful, warmhearted style but with a discouraging message. What is a juvenile delinquent? The author isn't sure and, by the time you are through, neither are you. The author agrees that many times the delinquent is psychologically sick, but no one can be sure what the sickness is, nor how it can be cured —or, for that matter, whether it can be cured. Nevertheless, with delinquency apparently on the increase in the nation's fast-growing urban areas, this is a good text to read to understand this troubled 3% of the nation's young people. Its blunt prose will surprise you. You will be amazed what a ten-year old kid in trouble knows and does.

Almost inadvertently, the author suggests at least two methods of relieving this problem. When new, decent, low-cost housing was provided in one troubled area, the tensions began to subside. She is impressed also to find that the confident message of Father Divine, the

Negro spiritual leader, has healed some of these sick, and even dope-ridden, sufferers for whom the psychologist's couch was no help. The author, if she explored further, would find that many others in trouble have found help from a 3,000-year-old document, known as the Decalogue, and by a sermon and other counseling from an itinerant carpenter-preacher some 2,000 years ago.

The author dislikes the power given to judges in children's courts, argues that the courts should be composed of ordinary people who know the neighborhood and the home conditions.

In short, the psychologist's couch is not an easy way out.

Metropolitan Areas

THE FEDERAL GOVERNMENT AND METROPOLITAN AREAS—*By Robert H. Connery and Richard H. Leach. Harvard University Press, Harvard University, Cambridge* 38, *Mass.* 1960. 275 *pp.* $4.75.

The authors try hard to make a convincing case for urgency in solving metropolitan problems. They spend much of the text in a discussion of associations and other groups that they feel should be "spokesmen" for these urban areas.

Some of their discussion answers why the proposals are premature. More developments must take place before the vigorous fragments of the metropolitan areas will surrender their sovereignties to some spokesman. The time will come but it has not come yet.

We wonder when some political scientist will surprise almost everybody by "discovering" that one of our greatest needs is to redraw st[illegible] boundaries, putting them into harmo[illegible] with urban developments. The authors explore all around this topic, show that orderly metropolitan growth is hampered by the state boundaries that it has to cross. The subject would make a fine doctoral thesis.

Area-Wide Planning

DELAWARE VALLEY REGION OF BURLINGTON COUNTY—NEW JERSEY FUTURE DEVELOPMENT PATTERNS—*Community Planning Associates, Inc., P. O. Box* 206, *West Trenton, N. J.* 88 *pp.* 1960. $7.50.

One of the most spectacular planning reports we have ever seen. It is a report that "sells" its recommendations. It is king size, 14 x 18 inches, on good quality paper, with convincing drawings and overlays. It automatically makes one enthusiastic about the proposals.

Employee Health Programs

THE HEALTH OF PEOPLE WHO WORK—*By Albert Q. Maisel. The National Health Council,* 1790 *Broadway, New York* 19, *N. Y.* 1960. 268 *pp.* $4.50.

This book is a summary of forum discussions in which many of our country's foremost authorities on every phase of occupational health took part. It emphasizes that:

- there is a need for more attention to the health of our working people.
- there is much to be gained in sharing experiences in this field.
- resources have only been lightly tapped to develop occupational health.

It offers practical help and guidance to employers for planning and improving occupational health programs. It was compiled in an effort to stimulate greater interest in occupational health, to improve the health of workers, their dependents and the communities in which they live.

Composting

INTERNATIONAL RESEARCH GROUP ON REFUSE DISPOSAL (IRGR) INFORMATION BULLETIN No. 7—*International Agricultural Centre, Netherlands. Translated by Department of Health, Education and Welfare, Public Health Service, P. O. Box* 769, *Savannah, Ga.* 1959. 23 *pp.*

This is a translation of summaries made of papers presented at a European conference on composting. It discusses techniques, hygiene, biological features, the value of the compost as a fertilizer, and the costs, recognizing the lower cost of European labor.

Those wishing to explore the subject further can obtain the complete papers in English at a price of $6.70, from the International Agricultural Centre, 1 Gen Foulkesweg, Wageringen, the Netherlands. A limited number of color slides with a brochure also is available from Stitching "Compost" Jac, Obrechtstraat 67, Amsterdam, the Netherlands, at a price of $13.40.

Racial Problems and Housing

STUDIES IN HOUSING AND MINORITY GROUPS—*By Nathan Glazer and Davis McEntire. University of California Press, Berkeley* 4, *Calif.* 1960. 228 *pp.* $6.

This is the third volume in a series of research reports to the Commission on Race and Housing and financed by the

(Continued on page 190)

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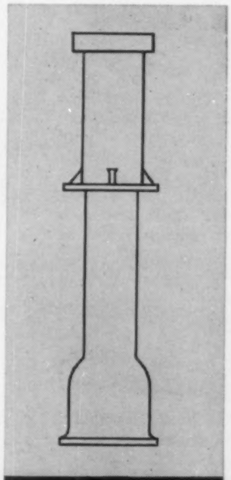
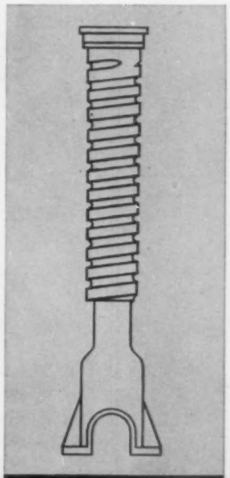


2 pc. sliding type adj. 5¼" valve box



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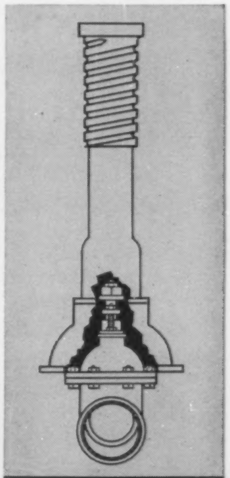

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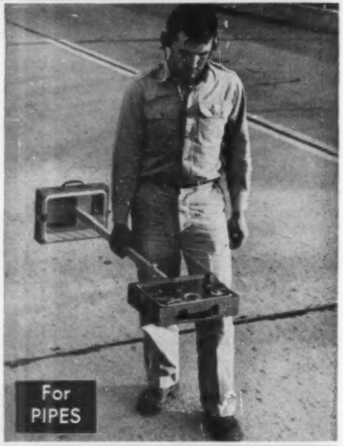

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(Continued from page 189)

Fund for the Republic. It embodies seven studies of housing, among them: a contrast of Mexican-Americans and Negroes in San Antonio and Houston; a contrast of Negroes in New Orleans and Miami; Japanese-Americans in San Francisco and environs; Puerto Ricans in New York; and a middle-class neighborhood in Detroit that is changing from white to Negro occupancy.

The twelve social scientists who have contributed to the book analyze the interplay of factors involved. Although the study embraces housing in some of our largest cities, it brings out the factors of prejudice, poverty, differing cultural backgrounds and values, the interest of builders, financiers, real estate agents and home owners that cause ghetto-like areas in other cities as well.

Mr. Glazer, in the introduction, summarizes the findings of these studies and assesses their significance. The studies point out how the housing opportunities of certain minority groups have been improved, thereby giving some clues to the possible solution of this increasingly grave problem in our rapidly growing urban areas today.

ADMINISTRATION AND GOVERNMENT

GENERAL—Proceedings of the 1959 American Municipal Congress. American Municipal Association, 1612 K St., N. W., Washington 6, D. C. 1960. 102 pp. $2.

RICHMOND, CALIF.—Workable Program: A Report on Goals and Progress. Office of the City Manager, City Hall, Richmond, Calif. 1960. 38 pp.

ANNUAL REPORTS WORTH READING

CINCINNATI, OHIO—Cincinnati Progress. City Manager, City Hall, Cincinnati, Ohio. 1959. 16 pp.

DANVILLE, VA.—Report of Operations. Water, Gas and Electric Departments, Service Building, Danville, Va. 1959. 17 pp.

LAGRANGE, GA.—LaGrange Progress 1949-1959. Office of the City Manager, City Hall, LaGrange, Ga. 1959. 11 pp. $1.

MOUNT UNION, PA.—Annual Report. Office of the Borough Secretary, Borough Hall, Mount Union, Pa. 1959. 32 pp.

PASADENA, CALIF.—People, Taxes and Government. Office of the City Manager, City Hall, Pasadena, Calif. 1959. 56 pp.

EDUCATION AND WELFARE

GENERAL—Fall 1959 Enrollment, Teachers and Schoolhousing; Circular No. 604. U. S. Dept. of Health, Education, and Welfare. U. S. Government Printing Office, Washington 25, D. C. 1959. 20 pp. 25 cents.

PHILADELPHIA, PA.—Design for Human Dignity. Department of Public Welfare, City Hall, Philadelphia, Pa. 1959. 24 pp.

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GENERAL—A Student's Guide to Resources for Professional Planning. City Planning and Landscape Architecture Library, University of Illinois, Urbana, Ill. 1959. 35 pp. 50 cents.

BAKERSFIELD, CALIF.—Bakersfield Study Area—Physical Determinants. Kern County Planning Commission, 1103 Golden State Highway, Bakersfield, Calif. 1959. 82 pp.

URBAN RENEWAL

COLUMBIA, S. C.—Urban Rehabilitation Commission Three Year Report. Department of Urban Rehabilitation, City Hall, Columbia, S. C. 1960. 16 pp.

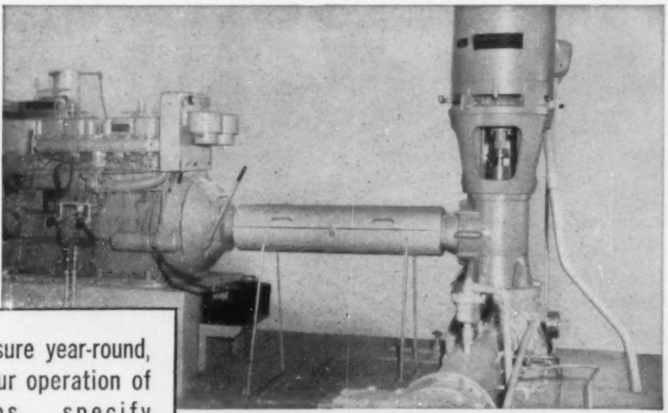
NEW YORK, N. Y.—Penn Station South. 63 pp. Battery Park. 63 pp. Sound View. 48 pp. Slum Clearance Plans. City of New York, Office of Committee on Slum Clearance, Randall's Island, New York 35, N. Y. 1960.

REPRESENTATIVE MUNICIPAL BOND ISSUES

From May 4th to June 1st, 1960

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
5/ 4/60	Roseville, Minn.	1,000	Sewer Improvement	....	....	4.54
5/ 5/60	Central Contra Costa Sanitary Dist., Calif.	2,900	Sewer	....	....	4.29
5/ 5/60	Dayton, Ohio	4,380	Airport, Sewer, Recreation	11¼	3.33	3.30
5/ 5/60	Westwood, Mass.	500	Sewerage and Drainage	10½	3.60	3.54
5/10/60	Oneida Co., N. Y.	2,470	Public Improvement	13¾	3.25	3.22
5/10/60	Parma, Ohio	3,446	Sewer, Park, Street	6	4.00	3.88
5/10/60	Wichita, Kan.	3,246	General Obligation	6½	....	3.29
5/11/60	Colorado Springs, Colo.	6,000	Utilities Revenue	8½	....	3.36
5/11/60	Indianapolis, Ind., Sanitary District	1,110	Sanitary	16⅙	3.50	3.37
5/12/60	Groton, Conn.	1,000	Water and Electric	10½	3.50	3.45
5/12/60	Springfield, Mass.	1,000	Tax Anticipation	½	1.97	1.97
5/12/60	Utica, N. Y.	1,094	Pub Imp., Redevelopment	5½	3.00	2.99
5/17/60	Cincinnati, Ohio	9,515	Various Purpose Imp.	10½	....	3.35
5/17/60	Pittsburgh, Pa.	6,500	General Obligation	10½	3.50	3.44
5/17/60	Worcester, Mass.	1,000	Tax Anticipation	½	1.94	1.94
5/18/60	Onondaga Co., N. Y.	5,750	Sewer	15½	3.50	3.46
5/18/60	Renssalaer Co., N. Y.	2,029	General Obligation Imp.	13	3.90	3.81
5/24/60	Buckhannon, W. Va.	1,000	Sewer Revenue	26½	4.50	4.56
5/24/60	Madison, Wis.	3,000	School, Urb. Renewal	10½	3.25	3.24
6 /1/60	Montreal, Que.	14,000	Public Improvement	20	5.38	5.55

Compiled from THE BOND BUYER



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Protects water supply, sewage and flood control operations against power failures; also permits overhauling electric motor or power unit without interrupting service. Thousands in use by municipalities, industry and farmers. Available in turbine or engine driven combination drive (as shown here), standard and dual types, with either hollow or solid shaft. Sizes: 15 to 450 hp. Write now for engineering catalogs.

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GEAR & MANUFACTURING CO., LTD.
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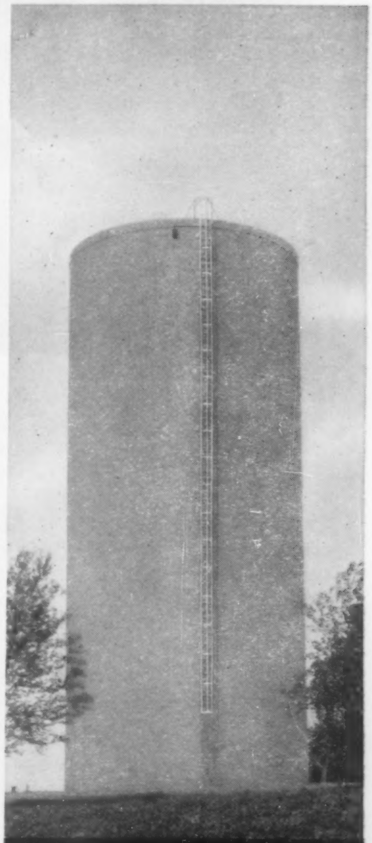
4

MORE THAN 2000 PRESTRESSED CONCRETE TANKS IN SERVICE



New 660.000 Gallon Stand Pipe. City of Wadsworth, Ohio.

Consider these features
- Minimum maintenance
- 75% construction cost spent locally
- Owners seldom return to other types
- Longest service life of any tank
- Lowest overall cost to community

Send for Bulletin T-22

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Tel.: EDgewood 3-4040

THE CANADA GUNITE COMPANY, LTD.
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28400 Clawiter Road, Hayward, Calif.
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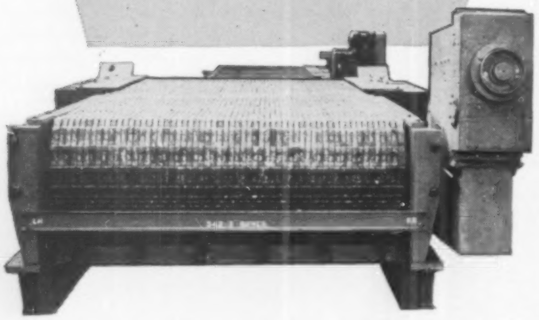
ILLINOIS INCINERATORS
with Cast Steel Links
Offer
Trouble Free Performance
High Efficiency



Testing incinerator before installation in New York City's Gansevoort Refuse Disposal Plant.

Cast steel links on both the bar/key type and chain grate models provide less brittle grate surface than ordinary cast iron, with greater resistance to heat and the abrasive qualities of some refuse.

The ORIGINAL overlapping link or key design eliminates the possible clogging or damaging of links — reduces sifting of material through grate.

- Any desired number of tuyeres for better zone control
- Easily accessible take-up mechanism
- Automatic feed — No heavy stoking or cleaning of fires
- Continuous discharge of decontaminated residue

All Illinois Incinerators are customized to your needs . . . Built in any size desired up to 24 feet wide. You specify, we satisfy.

Supervised Assembly at Your Plant
Write Today for Colorful Brochure

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ALTON, ILLINOIS
Mfrs. of: Incinerators • Industrial Stokers • Sintering Machines

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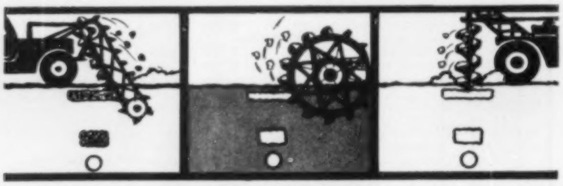
Revolutionary New Product!
QUIK-FIND
COLOR
DETECTING SYSTEMS
"THE ANSWER TO FINDING ANYTHING BURIED"

QUIK-FIND is placed about two feet above the actual buried "spot". For example: a tee or wye. A larger QUIK-FIND marking is placed near the surface of the ground level to identify the spot or object below to be located. Each QUIK-FIND marking can be extended as long, as far, or as deep as it seems advisable for the particular purpose.

- Permanent-Indestructible Underground Marking
- Eliminates Costly Damage and Breakage of Underground Placements, Fittings, Cables, Sewers, etc.
- Identifies Underground Items and Locations
- Sacked in Dry Form For Easy Application
- Five Colors To Contrast With Any Soil: Red, Yellow, Green, White, Black.



WHEN BACK HOE OR DIGGING MACHINERY TURNS UP QUIK-FIND COLOR CLOSE TO SURFACE, THE TEE OR WYE IS EXACTLY BELOW. WHEN HOE DIGS DEEPER AND INTERCEPTS LOWER QUIK-FIND COLORED EARTH, THEN HAND TOOLS ARE USED TO FIND CONNECTION WITHOUT BREAKAGE.

Manufactured by

ALLEN, TREMPER & SMITH, INC.
WATERMAN, ILL. — STREATOR, ILL.

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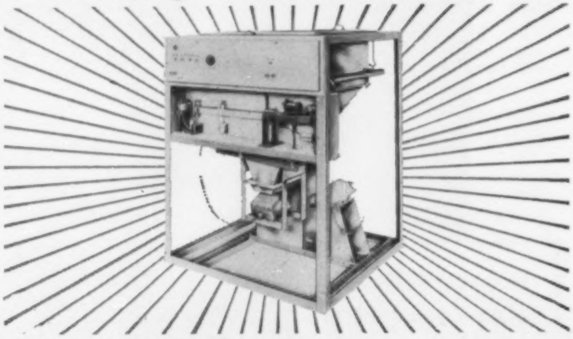
accurate, dependable, continuous weigh feeding of dry chemicals in water and sewage treatment with . . .



SYNTRON **Diminishing Batch**

WEIGH FEEDER MACHINES

SYNTRON Weigh Feeder Machines enable you to set up precalculated chemical treatment in which the additive is accurately weighed and then fed on a pre-selected pounds per hour basis—from 3 pounds to 300 pounds per hour.

With SYNTRON Weigh Feeders you are assured an accurate amount of material has been injected into the process at a smooth, even rate over a given period.

Fill your bulk weigh feeding needs with SYNTRON Diminishing Batch Weigh Feeder Machines.

SYNTRON COMPANY
Quality Equipment Since 1921
430 Lexington Ave. Homer City, Penna.

Introduces New Street Sweeper

WAYNE MFG. CO., 2434 E. LEXINGTON AVE., POMONA, CALIF., announces the availability of its newest street sweeper, the Model 520.

A full 4-cubic-yard power street sweeper, the 520 is offered with single or double gutter brooms and single or dual controls. Gutter brooms are located in front of the wheels, within full view of the operator.

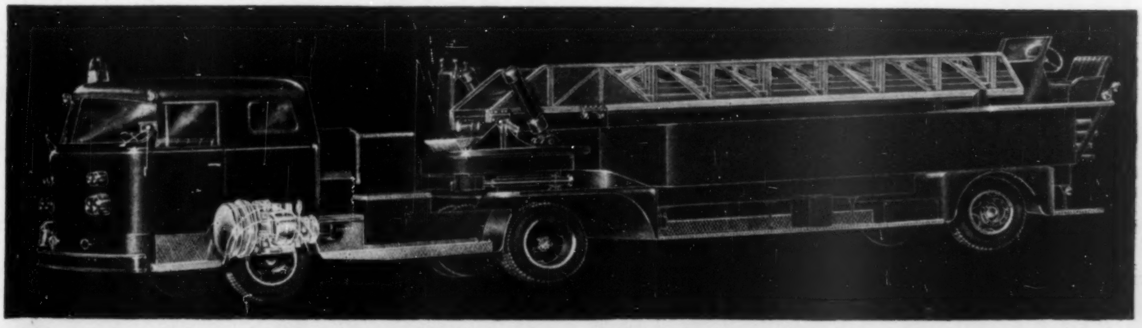
The 520 pivots easily around sharp curb returns, sweeps narrow or dead-end streets quickly and easily. Three wheel design insures maximum maneuverability and safety. Elevator rubber drive chains are offered with a 10,000-mile guarantee.

For Safe, Appealing Play

Within the fertile mind of a child, a train is a train, is a giant steam valve, is a crow's nest, is a trapeze, etc.

Municipal playground and recreation officials recognize that imaginative young minds will transform colorful, appealing play items into whatever fancy dictates. So does CHILDREN'S PLAYGROUND EQUIPMENT CO., P. O. BOX 334, CORONA DEL MAR, CALIF., creators of this fun-inviting train, which is made of many shapes and sizes of Bethlehem steel sheets and pipes, which provide strong supports, smooth surfaces for climbing and clean joints without sharp corners. The train is one product in a complete line of sturdy, long-lasting idea-producing playground equipment.

Turbine-Powered Fire Engine



This is an artist's concept of the world's first gas turbine-powered fire truck—a 100-foot aerial ladder truck built by AMERICAN LAFRANCE OF ELMIRA, N. Y. and powered by a Boeing 502 gas turbine engine, which develops 325 horsepower and weighs 325 pounds, about 1% of the total truck weight. The aerial has been ordered by the Seattle, Wash. fire department. Delivery is scheduled for the fall of 1960.

"AT CLEVELAND MOTOR VEHICLE MAINTENANCE DIVISION we save the taxpayers money by protecting against INDUSTRIAL DERMATITIS with

Go-Jo

Creme Hand Cleaner"

...says Raymond Washington, Garageman, Motor Vehicle Maintenance Division, City of Cleveland, Ohio.

A department that operates on municipal funds has a responsibility to use the taxpayer's dollar wisely. When Dermatitis strikes, on-the-job efficiency suffers and money is wasted. That's why it's important to encourage good skin hygiene and provide Go-Jo Dispensers throughout the shop. The handy dispensers save time and cut clean-up costs 75%.

Go-Jo
HAND CLEANER

PURGES DEEPLY IMBEDDED GREASE AND GRIME!
(Excellent for "on-the-spot" cleaning; works best with water.)

PROTECTS AGAINST INDUSTRIAL DERMATITIS WITH MEDICALLY APPROVED GT-7!
(a powerful antiseptic.)

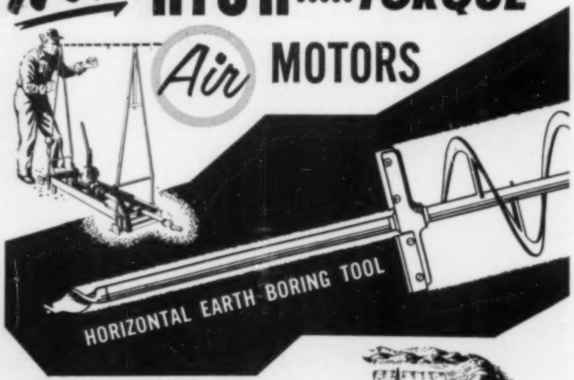
CONTAINS SOOTHING EMOLLIENTS TO PREVENT SKIN DRYING!
(This guards against "dangerous starting conditions" of Dermatitis.)

For further information, write:

2102

GOJER, INC. Dept. AC 760
Box 991 — AKRON 9, OHIO

New HIGH.....POWER .....TORQUE Air MOTORS



. . . ample power to rip through tough roots and earth formations . . . full speed and torque right up to stalling point . . . safer to operate than engine or electric drives.

WRITE FOR BULLETIN

FASTER Pipe Installation — LESS WASTED TIME

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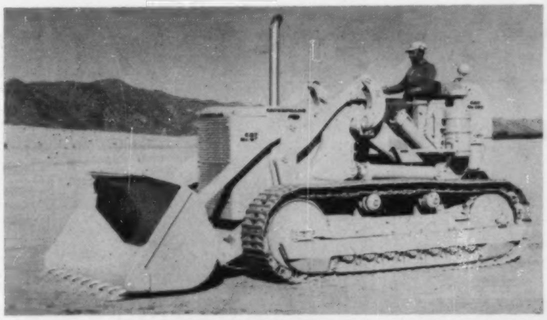
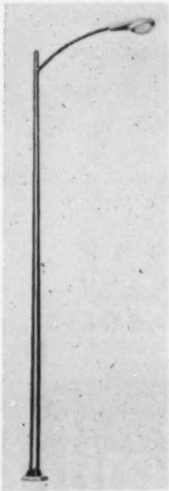


Caterpillar's New Track-Type Traxcavator

A new, 2½-cubic-yard Traxcavator with power shift transmission has been announced by Caterpillar Tractor Co., Peoria, Ill. The 977 Series H is powered by a new, compact turbocharged diesel engine that develops 150 net horsepower. A new hydraulic system reduces cycle times as much as 20% and has 41% greater lifting capacity. Productivity on average jobs is said to be 25% greater than with former models. A full line of attachments, including a high production side dump bucket, is available for the 977 Series H.



New Line of Outdoor Lighting Equipment

Valley Manufacturing Co., Valley, Nebr., is now producing equipment for street, highway and commercial lighting installations. Specific products include lighting standards, mast arms, bracket arms, strain poles, stadium lighting standards, hinged poles and signal support standards. Tapered poles will be produced in all standard sizes to meet all municipal and state specifications. They will include tapered poles in steel of 3, 7, or 11 gauge.

The company reports that its new manufacturing facilities include both metallurgical and physical testing as well as rigid process control standards. For full information, pricing and production schedules, write the company.

Speeds Street, Park Grading, Leveling

The Model RH is a heavy-duty, tractor-mounted rake for unimproved maintenance or park work which combines a rake, scarifier, and grader blade in one compact unit. It has been introduced by York Modern Corp.

The rake may be raised, lowered, or tilted by the tractor operator directly from the driving position. It rakes a swath from 7½ to 10 feet wide, adjusts to five working positions, and may be angled to discharge material either to the right or left.

The rake grades and levels, screens out oversize material, spreads soil, gravel, or crushed stone, removes sticks, stones and debris, leaves a smooth surface.

The scarifier, which attaches to the rake frame and works ahead of the rake, has a working width of six feet. It loosens hard or com-

(Continued on page 197)

SWENSON the Summer-Winter Spreader...

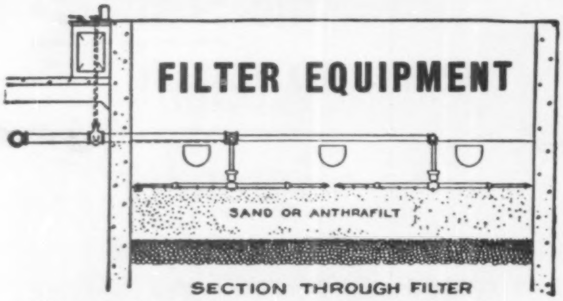
U. S. Army Photograph

for resurfacing and ice control

Spread sand, gravel, salt, calcium chloride, cinders or any combination of these materials. Clutch-controlled from cab of truck. Any desired rate-of-flow. Steady or intermittent up to 30 M.P.H. Narrow strips or full traffic lanes. Forward or reverse. Models to fit any dump-truck box. Chain or hydraulic drive. Speed summer construction jobs, dust control, soil stabilization. Handle winter ice-control problems faster, safer, more efficiently. Write for complete information.

SWENSON SPREADER
LINDENWOOD, ILLINOIS

PALMER



Filter Bed Agitator Advantages

Requires an average of 40% less wash water

Eliminates mud balls

Prevents cracking and shrinking of the beds

Produces "new" sand after short period of normal operation

Enables you to increase filter runs up to 50%

Anthrafilt Advantages

Doubles the length of filter r attainable with sand a quartz media

Requires one-half as much wa water

Filters are out of service les because of the shorter wa cycle

Coating, caking or balling wit mud, lime, iron or mangane reduced to the minimum

Write for Circular

PALMER FILTER EQUIPMENT CO.
P. O. BOX 1655, ERIE, PA.

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— APPRAISERS —
Founded 1923
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SPECIALIZING IN THE REVALUATION OF MUNICIPALITIES AND RURAL PROPERTY FOR LOCAL TAX EQUALIZATION PURPOSES

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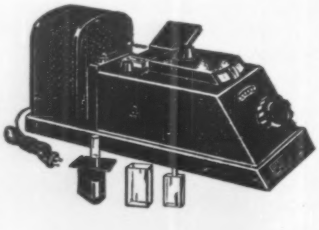
West Des Moines, Iowa, 712 28th Street

KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street, New York, N. Y.

The "Pick" of
MINNEAPOLIS

THE Pick-Nicollet

600 Rooms with bath from $6.00

NO CHARGE FOR CHILDREN
FREE RADIO AND TV
AIR-CONDITIONED ROOMS

Delicious Cuisine and Beverages
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- COFFEE SHOP

ALWAYS THE BEST FOR EVERY GUEST
ALBERT Pick HOTELS

FEderal 3-3177
Thomas P. Ryan, mgr.

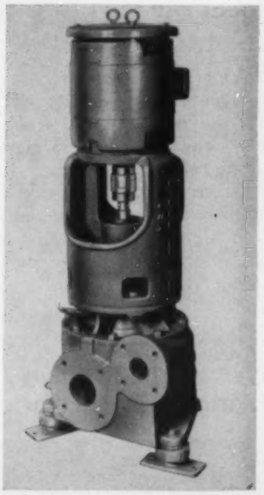
(Continued from page 195)

pacted ground with points that penetrate to six inches.

The grader blade clamps to the front of the rake teeth, and operates in any of the five positions to which the rake may be set.

For complete information, write YORK MODERN CORP., UNADILLA, N. Y.,

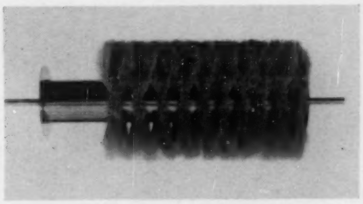
Vertical Centrifugal Pumps



These space-saving pumps are designed for continuous operation and with capacities to 600 gpm and heads to 110 feet. They are all ball bearing, floor-mounted, flexible coupled with mechanical shaft seal and are recommended for hot and cold water circulating, condenser water circulating and water supply booster service.

According to the manufacturer, WEIL PUMP CO., 1530 N. FREMONT ST., CHICAGO 22, ILL., the vertical VKY pump can be removed from its casing without disturbing piping connections and can be replaced easily without realignment problems. The pump is quiet operating, vibration and noise eliminated by rubber-in-shear vibration eliminator mounts.

Circular Steel Wire Pickup Brooms for Street Sweepers

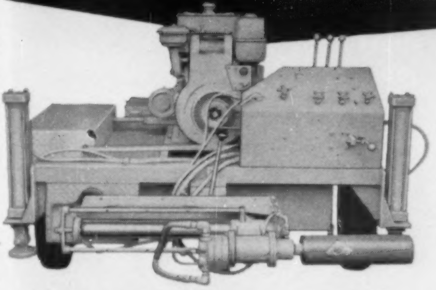


This new type of broom for power street sweepers consists of round, steel wire sections mounted in multiple on a steel core and pressed to form convolutions, so that when completely assembled, the brush effects a criss-cross spiral and is uniform in density and fill.

Because of its convoluted brush sections, UniSweep, as it is called, sweeps on a multiplane, instead of on the usual single plane of conventional brushes. This produces a reciprocating, or back and forth sweeping action, at the same time that the brush is sweeping forward.

UniSweep is made for all makes of sweeping machines, including automatic, tractor-mounted, and towed. It works well on rough ground as well as smooth streets

(Continued on page 198)



specify **MOBILE**
hydraulic powered DRILLS
for *speed, power, economy...*

MOBILE DRILL

MARK V

It's the only diamond coring machine designed and built specifically for *production-type* concrete test coring on highways, aircraft runways and other slab-type masonry structures. Also available without custom-built trailer for mounting on ¾ ton utility truck.

MOBILE DRILL

DIGGER

Production type earth auger bores holes for utility poles, guard rails and similar installations with lightning speed.

MOBILE DRILL

B-40 EXPLORER

Lightweight B-40 core drills to 250′ and augers to 100′. It's a natural for diversified soils exploratory work and all-round utility.

MOBILE DRILL

MARK IV

Diamond masonry drilling machine has exclusive *automatic hydraulic feed.* It's lightweight, portable, easy to use.

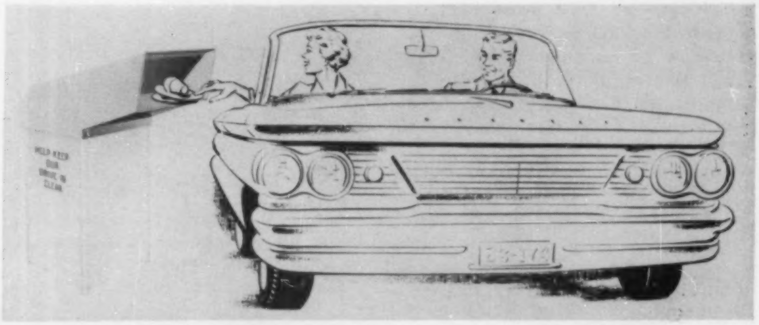
Mobile offers a complete line of hydraulic rotary drilling machines, soil sampling equipment, diamond masonry coring machines, diamond bits, drilling tools and equipment.

MOBILE DRILLING, Inc.
960 N. Pennsylvania Street • Dept. 10
Indianapolis 4, Indiana

(Continued from page 197)

and easily handles sand, gravel, crushed stone, dried mud, snow and leaves.

Each brush section contains 3 keyways, and is slid onto a steel core containing 3 keys, which automatically line up and lock the sections in place. A complete unit is assembled in a matter of minutes. For additional information, write ROADMASTER BRUSH CORP., P. O. Box 321, UNION, N. J.



"Drive-Up" Litter Receptacle

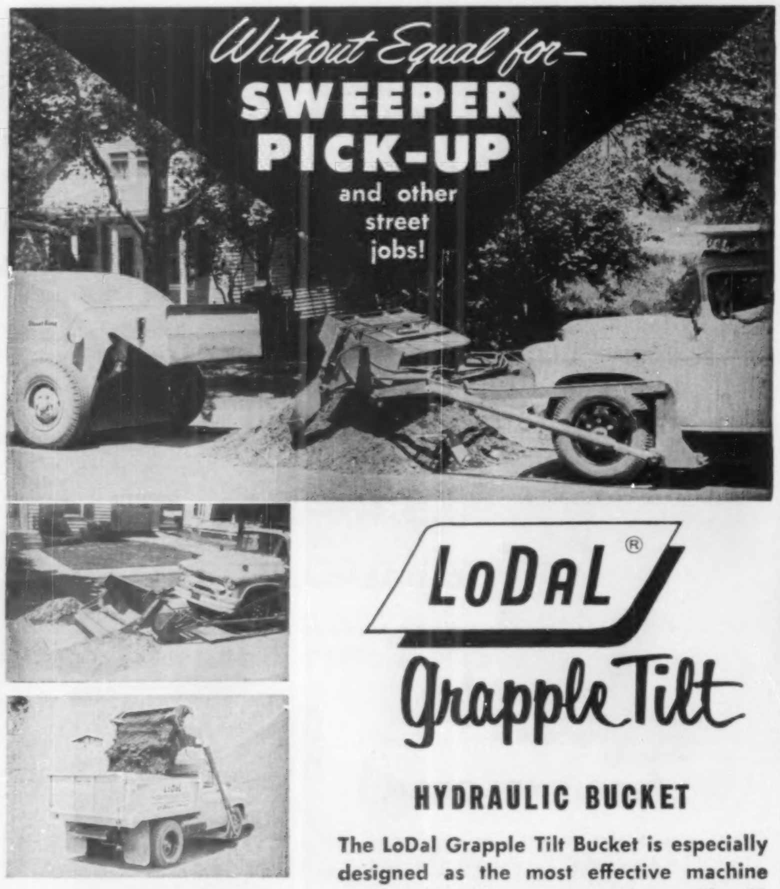
Both motorists and street and highway maintenance crews will appreciate this new Bennett waste receptacle which allows drivers to get rid of refuse and litter without moving from their cars. Sample installations indicate improved cleanliness on highways of 50% or more. For full information, write BENNETT MFG. CO., ALDEN, N. Y.

Street and Highway Lighting Conference

A May 2-3 conference attended by 25 utility men at the Holophane Engineering Center, Newark, Ohio, covered such subjects at "Fundamentals of Light Vision on Streets and Highways," "Luminaire Optics," "Maintenance of Lamps and Luminaires," and "Economics of Roadway Lighting."

Of special interest to these engineers was the design and making of the intricate prismatic molds used for pressing refractors designed to produce precise patterns of light distributions for most efficient and effective utilization of the different light sources used in roadway lighting.

For further information on improved street lighting, write to HOLOPHANE CO., INC., STREET LIGHTING DEPT., NEWARK, OHIO.


Without Equal for—
SWEEPER PICK-UP
and other street jobs!

LoDal®
Grapple Tilt
HYDRAULIC BUCKET

The LoDal Grapple Tilt Bucket is especially designed as the most effective machine made today for sweeper pick-up. The 42 inches of pavement drag gives completely clean pick-up with no need for manpower hand shoveling into the bucket. The hydraulic grapple (with balanced closing action) does all the work! Designed for a self loading truck to which it is mounted and for loading other units. Bucket capacities 3/4 and 1 cubic yards.

To Save You Money—

May we send you detailed information?

LoDal, Inc.
NORWAY, MICHIGAN

Huber-Warco Holds Sales Meeting

More than 300 representatives of the Huber-Warco Company of Marion, Ohio, gathered in Columbus and Marion for a three-day sales meeting May 17-19.

The meeting marked completion of a five-year program of plant consolidation and product development begun in 1955 when W. A. Riddell Company of Bucyrus and the Huber Manufacturing Company of Marion were merged.

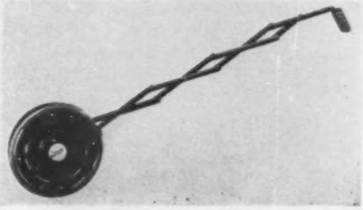
The photograph above (left) shows members of the H-W team completing arrangements for the three-day meeting. They are (left to right): Jacque E. Jones, president, and Joseph Whelan, Glenn Porter and J. E. Farst, sales managers. At the right, distributors from the United States, Canada, Mexico and Cuba and representatives from 25 publications serving the construction industry view the complete H-W line of motor graders, road rollers and maintainers.

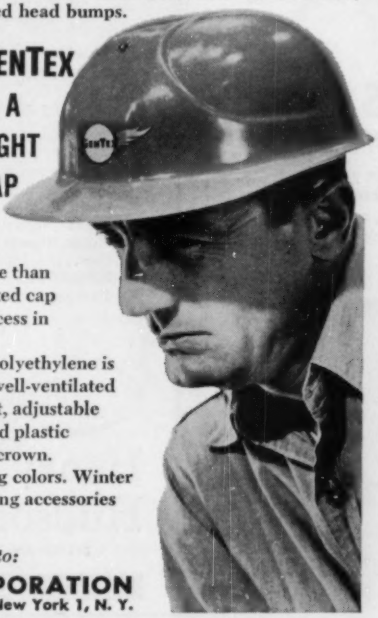
Measures Distances at a Walk

Model 202 is the designation of a new measuring wheel, announced by The Lufkin Rule Co., of Saginaw, Mich. It is designed to measure relatively smooth surfaces and is well suited to the needs of police officials, traffic engineers and paving and construction crews.

Using the 202, one man can measure horizontal, vertical and curved surfaces—from wall to wall, from line to line. Total distance is recorded in feet and inches by a built-in totalizer and the recessed scale on the circumference. An audible click every two feet and a loud bell note indicate the 100-foot mark. A zero

(Continued on page 200)





Today's hard hats guard men against head injury in the heavy construction trades...electrical industry...out on the oilfields. It's standard practice. But...

MAINTENANCE AND SERVICE PERSONNEL NEED HEAD PROTECTION, TOO! **Meter readers, mechanics, maintenance men, sanitation workers, park employees, light construction workers, airlines personnel are constantly subject to unexpected head bumps.**

THAT'S WHY GENTEX HAS DESIGNED A NEW LIGHTWEIGHT PROTECTIVE CAP

Weighs only 8 oz. complete, yet resists impact of more than 20-foot pounds. Peaked cap design gives most access in cramped quarters. Color-impregnated polyethylene is comfort-contoured, well-ventilated with shock-absorbent, adjustable acetate headband and plastic foam cushion inside crown. Full range job coding colors. Winter liners, noise controlling accessories also available.

Write for full details to:

GENTEX CORPORATION
450 Seventh Avenue, New York 1, N. Y.

Sam Patton, County Engineer, Guernsey County, Ohio, recommends

FENCE FIRE

The heavy-duty brush and vegetation killer

"Fence Fire delivers a more perfect and quicker kill," says Mr. Patton, "with less applications and at a much lower net cost." It's also non-volatile . . . won't harm crops with drifting or vapors. Try Gledhill's new FENCE FIRE and see. NOW! . . . New Fence Fire contains large and wild animal repellent.

If you do your own spraying, use a *Gledhill Roadside Sprayer.* Now offers complete control of spraying width . . . economizes on chemicals and allows constant speed spraying regardless of width of spray being used.

THE
GLEDHILL
ROAD
MACHINERY CO.
Galion, Ohio

LISTEN!!--

If you want to increase the efficiency of your department by being in constant touch with your radio equipped vehicles,

YOU NEED

The PLECTRON Patrol

HIGH FREQUENCY F. M. RADIO RECEIVER

Receiver is crystal controlled and available on any frequency in the 25-54 or 152-174 megacycles bands. In use by city officials everywhere for listening to all messages sent and received by their 2-way radio equipped vehicles.

★ FULLY TRANSFORMER POWERED
★ CRYSTAL CONTROLLED FREQUENCY
★ LONG RANGE RECEPTION (up to 25 miles without outdoor antenna)
★ COMPACTLY BUILT IN ONE ATTRACTIVE METAL CASE
★ LOW COST: $87.50 Prepaid, cash with order

DISTRIBUTORS AND DEALERS NATIONALLY

For Complete Information
Please Write Dept. ACM-3

Plectron Corporation
OVERTON, NEBRASKA

(Continued from page 199)

reset knob permits presetting for a desired distance. The handle of the 202 extends and locks at a height of 34 inches, folds for compact storage.

Traffic Liners

WALD INDUSTRIES, INC., HUNTINGDON, PA., announces a new optical pointer to replace the long, projecting guide arm on striping machines.

The optical pointer fits snugly below the windshield of the striping machine cab. It is especially practical in confined city projects and allows the operator a choice of reference line such as the medial strip, edge line, or center line.

Plans Construction Equipment Show

A 4-day Construction Equipment Show is to be held in September at the KOEHRING Co., proving grounds near Waukesha, Wis. In addition to the company's Koehring Division, whose main plant is in Milwaukee, Wis., participating units will include: Buffalo-Springfield Co., Springfield, Ohio; Flaherty Mfg., Pocatello, Idaho; C. S. Johnson Co., Champaign, Ill., Koehring-California Co., Stockton, Calif.; Koehring Export Division, Milwaukee, Wis., Koehring-Waterous Ltd., Brantford, Ontario, Canada; and Parsons Co. and Shawnee Mfg., Newton, Ia.

The exhibits will feature equipment for a wide variety of construction activities. Available for inspection will be machines for road rolling and compaction, concrete paving and finishing, aggregate spreading, concrete batching and mixing, excavating and loading, hauling, material handling, trenching and backfilling, and drilling and boring.

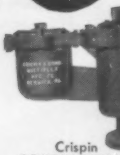
The show will be held in two flights, September 19-20, and 22-23.

Crispin

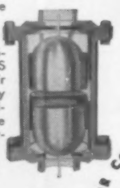
AIR VALVES

...control air safely and efficiently

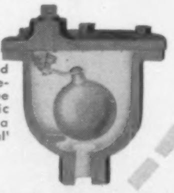
These basic advantages are yours when you use Crispin Air Valves . . . simplified construction, easy accessibility, maximum durability, minimum maintenance and efficient operation. You're safe with Crispin Air Valves on the job!



Crispin COMBINATION AIR VALVES . . . reduce installation and operating costs where a combination of an Air and Vacuum Valve and a Pressure Air Valve are required.



Crispin NEGATIVE PRESSURE AIR VALVES . . . release air semi-automatically from pipeline siphons to end the danger of throttled pipelines.



Crispin MIDGET AIR VALVES . . . ideal for venting hot water systems and are particularly useful in panel type units—synthetic plunger makes a perfect seal at all times.

AIR CONTROL VALVES • FOR OVER 45 YEARS

multiplex
MANUFACTURING COMPANY
BERWICK, PENNSYLVANIA
. Dept. E .

Write, wire or phone for complete information on dependable Crispin Air Valves that keep your pipelines open for safe, economical operation

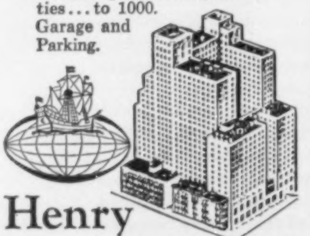
WELCOME

American Public Works Assn. & Equipment Conventioneers

to your meeting at the Coliseum August 14-17, 1960

Headquarter at the Henry Hudson Hotel

In the heart of New York City—58 steps from Coliseum. Near all activities & transportation terminals. Swimming Pool available to guests. Entertainment Nightly in Voyager Room. Superb Meeting Facilities... to 1000. Garage and Parking.

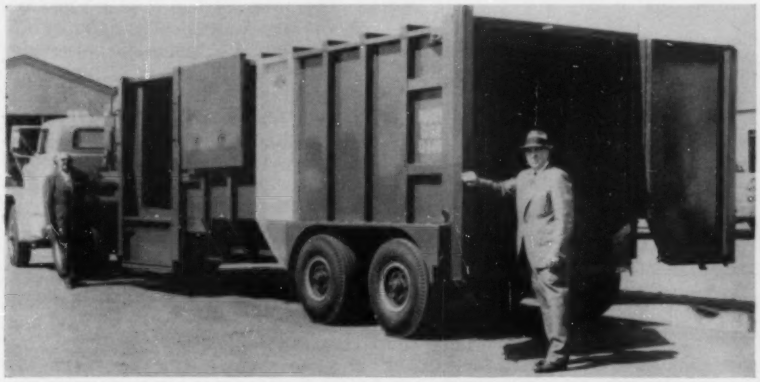


Henry Hudson Hotel

353 West 57th Street, New York 19
COlumbus 5-6100

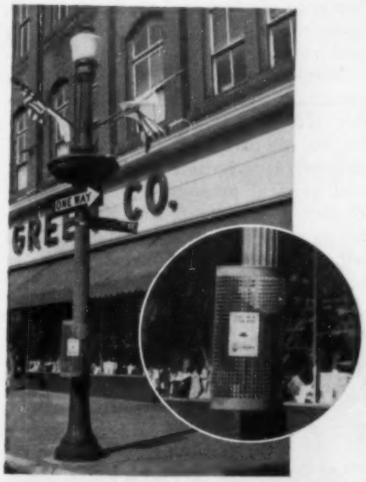
NEW YORK CITY

Holds 11 Tons of Refuse



This 35-cubic-yard refuse collection unit, which holds up to 11 tons of all kinds of compressed waste, was recently delivered to the City of Fort Worth, Texas. It is a Hobbs Hyd-Pak Trailer and is the largest ever used in the Texas city. Looking it over are Frank Rinehart (left) of the HYD-PAK DIVISION OF HOBBS TRAILERS and Assistant Director W. A. Satterwhite, Jr., of the Fort Worth public works department, who has opened the trailer's rear doors through which packed refuse is forced out after a day's run.

Mounted Litter Receptacle



Designed for use in shopping areas as an intermediate receptacle to catch small litter that ordinarily would not be deposited in large corner receptacles, this epoxy-coated "mid-block" trash basket is similar to types being used in various European cities.

It is formed of 16-gauge, cold-rolled steel, is 24-inches in height, 12 inches in diameter and has a capacity of 2400 cubic inches. The basket may be mounted on a pole or wall by means of bolts or metal strapping. A ¼-inch turn with a special wrench loosens the basket for easy emptying.

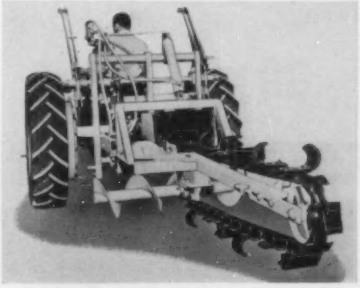
For complete information, write RODALE MFG. CO., INC., EMMAUS, PA.

Adds Another Pow-R-Ditcher to Line

A new ditcher, specifically designed to fit all 3-point tractor hitches, has a digging width of 6 inches to 16 inches and will dig to a depth of 4½ feet. It is the newest addition to the Vermeer Pow-R-Ditcher line and is designated as Model 3P.

An all-new hydraulic-actuated travel ratchet device gives full control of digging speed from one control lever. Power is taken from

(Continued on page 202)



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ENGINEERING—CONSTRUCTION
Contracts Taken Anywhere
226 N. Alabama St. • Indianapolis, Ind.

Indiana Gunite & Construction Co., Inc.
226 N. Alabama Street • Indianapolis, Ind.
Gentlemen: Please have a representative contact me. I am interested in:
Description: ....
....
....
NAME ....
STREET ....
CITY .... STATE ....

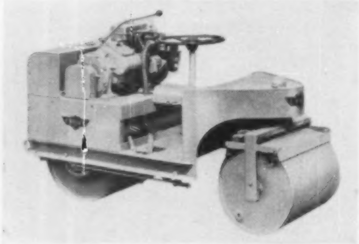
(Continued from page 201)

the tractor's hydraulic system. The PTO shaft is equipped with a double disc friction slip clutch for digging safety. The digging chain is the same as that used on the largest Pow-R-Ditchers.

The 3P Pow-R-Ditcher it well suited to the needs of municipalities, uitilities and contractors.

For additional information, write VERMEER MFG. CO., PELLA, IA.

Announces 1-Ton Tandem Roller



The new Essick Model 120 tandem roller has been completely redesigned and engineered and is well suited for soil, asphalt or turf compaction.

New features include lower profile, wider rolls, complete visibility of the area ahead, easy steering and rugged construction that ensures low maintenance. The 1-ton tandem roller is lifetime lubricated, has a short wheel base for short turning radius, and is easily transported. Maximum working weight is 2070 pounds.

For additional information, write ESSICK MANUFACTURING CO., 1950 SANTA FE AVE., LOS ANGELES 21, CALIF.

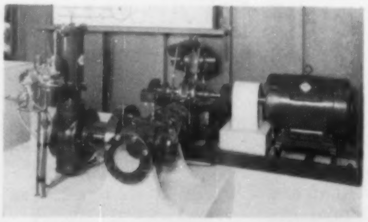
Changes Name

The company name of Specialty Manufacturing Co., Inc. of Houston, Texas has been changed to the Engler Manufacturing Corporation. The company is best known as a manufacturer of steel cut washers, products made to client specifications and rotary mowers.

Management will remain the same: A. R. Engler, original founder of Specialty Mfg. Co., Inc., continues as president; his son, J. F. Engler, is excutive vice president and general manager; Margrethe E. Engler is treasurer; and K. E. Wetzel is secretary and assistant treasurer. The extened sales force is headed by C. O. Lusk.

The corporation will now be composed of four separate divisions. The S. M. C. Mowal Division will produce rotary mowers in 4 to 15-foot widths.

Complete Pump Package Featured



A complete assembly of valve, pump motor and control was the attention-commanding feature of ALLIS-CHALMERS MFG. CO., MILWAUKEE 1, WIS., at the recent Amer-

FORD M. B CO. WABASH, IND

Meters Play

EASY-TO-GET

when they wear FORD YOKES

Riser Yokes

Angle Yokes

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Dress a meter up in a Ford Yoke and see what a difference it makes. No more fighting misalignment of pipes or wrong spacing between couplings. Just an easy twist of the wrist and you've got your meter.

Ask your meter man. He'll tell you that an easy-to-get meter can be kept more accurate so that it lasts longer and earns more revenue. Millions of Ford Yokes are in use.

Send for the Ford Catalog and learn more about getting your meter's worth.

FORD

FOR BETTER WATER SERVICES

THE FORD METER BOX COMPANY, INC. Wabash, Indiana

ican Water Works Association convention in Bal Harbour, Fla.

This complete operating package consists of a 6-inch hydraulically-operated Rotovalve in combination with a 5-inch x 5-inch, single-stage double-suction centrifugal pump with enclosed impeller, and a 30-hp open-type squirrel cage motor.

A wiring schematic panel, placed on the wall behind the unit at the exhibit, provided a visual demonstration of how the motor switchgear in a pumping unit is connected to the Rotovalve to control water-hammer in pump-check service.

Allis-Chalmers states that it is the only firm in the valve industry making this type of complete unit.

Purchasing News Briefs

- acquisition of Carswell Metal Drainage Products, Inc., Kansas City, Kans., is announced by **Lock Joint Pipe Co.**, East Orange, N. J., leading domestic producer of prestressed concrete pressure pipe. The acquisition will increase Lock Joint's participation in the growing market for corrugated metal pipe. Charles Kelly, formerly general manager of Carswell, joins Lock Joint as plant manager at Paola, Kans., where the metal pipe manufacturing plant is located.

- **Doyle Clemons and Associates, Inc.**, City and Town Planners, announce the opening of their offices at 513 Madison Ave., Room 215, Montgomery 4, Ala.

- A. E. Fitzpatrick, **Studebaker-Packard Corp.** fleet sales manager, reports that an all-new economy-winning engine is now available on the Lark Marshal, the compact police car that has proved it meets the rigid, heavy service requirements of law enforcement work.

- purchase of Felker Manufacturing Co., Torrance, Calif. manufacturer of high quality diamond abrasives cut-off blades, by **Bay State Abrasive Products Co.**, Westboro, Mass., is announced by Arthur E. Gilman, president of the Massachusetts grinding wheel firm. Felker will be operated as a wholly-owned subsidiary.

Red Flint

FILTER SANDS

UNDERDRAIN

GRAVELS

PROCESSED TO EXACTING SPECIFICATIONS
SHIPMENTS MADE BULK or BAGS—ANY QUANTITY

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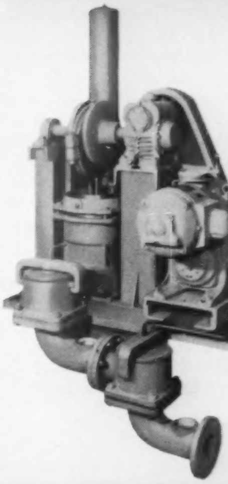
Eau Claire, Wis.—Phone TE 4-4164

Distribution of Filter Sands and underdrain Gravels to all States — and Territories of the U. S., Canada and Mexico

FOR PERMANENT POSITIVE PUMPING



"BUILT FOR WEAR — NOT REPAIR" is the promise behind every Dual Valve Komline-Sanderson Plunger Pump. Designed to provide positive sludge and slurry handling, the Komline-Sanderson standard plunger pump has exceptionally thick wall castings of fine-grained cast iron with 35,000 lb. P.S.I. tensile strength.

"Permanent, positive pumping" means just what it says; reliable, trouble-free pumping and metering year after year. Dual valve pump design provides continuous pumping, regardless of large solids in the sludge.

Compare the rugged construction and numerous exclusive features of Komline-Sanderson Plunger Pumps with others on the market, you'll see why they last longer and are much easier to maintain.

Write for Bulletin No. KSP-3

KOMLINE-SANDERSON
ENGINEERING CORPORATION
PEAPACK, NEW JERSEY
BRAMPTON, ONTARIO, CANADA

ABOUT PEOPLE

J. F. O'Grady

J. G. Hoyt, Jr.

Joseph F. O'Grady, product sales manager of the Municipal & Utility Division of **Rockwell Manufacturing Co.,** Pittsburgh 8, Pa., has been appointed assistant vice president of the M&U division. Taking his place will be John G. Hoyt, Jr., southeast district sales manager, who will be succeeded by Marion F. Huff, assistant district sales manager for the southeast district. The promotions were announced by Carl K. Madison, vice president.

Nichols Engineering & Research Corp., New York, N. Y., has appointed Thomas E. Davy as manager of its Filtration Division. In his work with Nichols, Mr. Davy will deal with both municipal and industrial waste applications.

The appointment of Michael A. Prigmore as controller of **Aurora Pump Division** is announced by John M. Bals, general manager. Mr. Prigmore has been associated with the parent company, The New York Air Brake Co., Aurora, Ill., for the past four years.

M. Wank

Martin Wank has been appointed sales promotion manager of Graver Water Conditioning Co., New York 11, N. Y., a division of **Union Tank Car Co.,** according to word from Marvin Lane, general manager of Graver. He will be responsible for all advertising, public relations and sales promotion programs for the company.

Glenn R. Petersen has been named manager of marketing for **General Electric Company's** communication business in Lynchburg, Va., according to an announcement by Harrison Van Aken, general manager of the General Electric Communication Products Department.

All directors of the **Allis-Chalmers Manufacturing Co.,** Milwaukee, Wis., were re-elected at the annual meeting of shareholders. At the regular board of directors meeting held following the annual meeting the following officers were re-elected: R. S. Stevenson, president; W. G. Scholl, executive vice president; Boyd S. Oberlink, senior vice president; J. L. Singleton, senior vice president; W. A. Yost, Jr., vice president, Staff Operations.

General Steel Tank Co., Birmingham, Ala., announces the appointment of H. H. White as general sales manager with offices at 6306 Walnut, Kansas City, Mo.

The following personnel changes at **United States Pipe and Foundry Co.,** Birmingham 2, Ala, are announced by Charles S. Northern, vice president: Whitney K. Stearns to succeed John Madden, Jr. (resigned) as sales agent in charge of the New York office; James J. McCarthy to replace Mr. Stearns as Boston sales agent; and William J. Wolfersheim to take charge of the Detroit office replacing Mr. McCarthy.

J. M. Masterson

Frank Marold, sales vice president of the **Griffin Pipe Division,** Griffin Wheel Company, Council Bluffs, Ia., announces the appointment of John M. Masterson as district manager, Denver, Colo. Mr. Masterson will serve the Rocky Mountain states.

Alex E. Mason has been appointed assistant sales manager of **Ludlow Manufacturing Co., Inc.,** Troy, N. Y., and George K. Console has been named New York City area district manager for the company, according to Kenneth O. Hodgson, vice president and sales manager.

William Fraser is now vice president and general sales manager of **Worthington Corp.,** Harrison, N. J.

Promotion of Ted N. Powell to the position of district manager at Kansas City, Mo., is announced by Norman D. Jesse, vice president and general sales manager of **Byron Jackson Pumps, Inc.,** Los Angeles, Calif.

C. J. Cannon

New vice president-sales at **Pitman Manufacturing Co.,** Grandview, Mo., is Charles J. Cannon, who has a strong background in sales management, marketing and hydraulic engineering. The appointment of Mr. Cannon is said to be "part of Pitman's program of 'tooling up' with the best available manpower to meet increasing market demands."

B. K. Hartman

Byron K. Hartman, executive vice president and general manager of the **Syntron Co.,** Homer City, Pa., has been named to succeed Carl S. Weyandt as president. Mr. Weyandt is one of the founders of Syntron and continues as a member of the board of directors of Syntron and the parent company, the Link Belt Co., Chicago, Ill.

The Heil Co., Milwaukee, Wis., has appointed Frederick A. Brubaker to the position of district manager of its Kansas City, Mo., sales office.

Keuffel & Esser Co., Hoboken, N. J., announces the appointment of Gerald F. Benkert as manager of its Detroit, Mich., branch and that of William C. Spinck as Detroit sales manager.

J. N. Bauman

J. N. Bauman, president of **The White Motor Co.,** Cleveland 1, Ohio, has been named chief executive officer of the company, a position held the past 25 years by Robert F. Black, chairman of the board. Mr. Black, who made the announcement, continues as chairman and will direct and supervise the general policies of the company.

H. C. Jenseth

The appointment of Harold C. Jenseth to the position of assistant to the president of **The Acme Wire Co.,** New Haven 14, Conn., has been made known by H. B. Bassett, president. At Acme, Mr. Jenseth will assist the president in administration of the firm's manufacturing activities, which include production of the Lamplighter photoelectric control for street lights, made by the company's Utility Products Division.

American Incinerator Corp., Detroit, Mich., has added four new members to its board of directors. They include Marlin J. W. Campbell, corporation attorney; Walter F. Finan, vice president of City Bank; A. M. Sargent, industrial consulting engineer; and Arthur C. Scheifle, of McManus, John,

(Continued on page 206)

TENNESSEE — construction of farm-to-market road.

MASSACHUSETTS—mix-in-place street resurfacing job.

ILLINOIS—grading a large industrial site.

UTAH—maintaining a county road.

GALION®
Model 160
MOTOR GRADERS

are always doing tough work on important jobs across the country.

They are the most useful units of construction equipment built today—for contractors on new jobs and for states, counties, townships, cities and towns on maintenance and repair work.

These rugged, powerful graders do all types of blading and scarifying work, regardless of location, earth condition, climate or weather.

30,020 pounds of working weight **balanced** to 160 diesel horsepower, with constant mesh transmission, produces the tractive effort that gives you the most push power at the blade ever developed in a grader its size.

Attachments for scarifying, bulldozing, snow-plowing, and an all-weather stand-up height cab are money making and useful attachments for you.

The hydraulic shiftable moldboard, power steering, and hydraulic fingertip controls for all operations are standard equipment.

Write today for complete specification literature.

THE GALION IRON WORKS & MFG. CO.
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Cable Address—GALIONIRON, Galion, Ohio

OHIO — construction of state route 1.

PENNSYLVANIA—working on highway 29 construction job.

LOUISIANA— ditching operation on road construction job.

ARIZONA — bank-cutting on construction of state route 93.

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VIBRATORY COMPACTORS • PNEUMATIC TIRE ROLLERS

THE GALION IRON WORKS & MFG. CO. Date__________
Dept. A-70, Galion, Ohio

Please send me complete information on the Galion Model 160 Motor Grader.

Name__________ Title__________

Firm or Dept. __________

Street__________ City__________ State__________

KILLS
PSYCHODA FLIES
in trickling filters

FORMULA R.S.C.
breaks the barrier of resistance for effective, sustained control of Psychoda flies in human and industrial wastes treatment plants.

kills flies, larvae and pupae

without damage to zoogleal film

without destroying beneficial bacteria

without reducing filter efficiency

NEW INHIBITORY FACTOR—Hundreds of tests have demonstrated that R.S.C. is extremely effective in killing Psychodae which have shown high degree of resistance to DDT, Methoxychlor, Lindane, Chlordane, Dieldrin, Aldrin, Malathion and other insecticides.

This is accomplished by an inhibitory factor which renders a hitherto resistant fly susceptible to the insecticides in the R.S.C. formula. Field tests in such widely separated areas as Illinois, Texas, Florida have shown that use of R.S.C. reduces filter fly population to practically nil.

EASY TO USE—Dose with R.S.C. liquid concentrate through primary effluent and spray surrounding surfaces to kill flying adults.

SAFE, ECONOMICAL—R.S.C. is registered by the United States Department of Agriculture for control of Psychoda flies. When used according to directions, R.S.C. is safe, economical, and the most effective method of filter fly control to date.

Send for literature and field test reports.

For a cleaner plant this summer, use

R S C T.M.
PAT. APPL. FOR

GLENN
CHEMICAL CO.
Industrial Chemicals Division
CHICAGO 14, ILLINOIS

About People

(Continued from page 204)

& Adams, Inc., advertising agency. Continuing on the board are Ellis E. Smauder, president; Alden Smauder, secretary-treasurer; and R. D. Bond, C.P.A. The 34-year-old corporation designs and manufactures domestic, commercial, industrial and municipal waste disposal systems and has been a leader in air pollution control activities.

Robert Bendlin has been named manager of the **Blackburn-Smith Manufacturing Co.,** Hoboken, N. J., subsidiary of the Condenser Service Engineering Co., Inc. Mr. Bendlin succeeds Myron Kitaif, retired.

CLASSIFIED ADVERTISING

Advertisements in this section will be accepted at the rate of $15 per col. inch (minimum 2 inches). Send copy for ads to the Production Department, THE AMERICAN CITY, 470 Park Ave. South, New York 16, N. Y.

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Transistorized Pipe, Valve and Cable Locator. Sell to cities, gas and water utilities, pipeline contractors, plumbers, engineering companies, etc. For more information write Gardiner Electronics Company, Dept. 37, 2545 E. Indian School Road, Phoenix, Arizona.

FLOOD CONTROL ENGINEER

A registered Professional Engineer between age of 30 to 45 years with experience in Hydrology and Hydraulics. Starting salary $10,000.00 per year with car furnished. Applicant should have ability to take over complete charge of office. Apply with complete resume of experience and qualifications to Board of Flood Control Commissioners, City Hall, Indianapolis 4, Indiana.

ASSOCIATE EDITOR WANTED

. . . with active experience in municipal service, preferably in water and sewage treatment.

Salary open. Entails a moderate amount of travel.

Send resume and salary requirements to Box #125

THE AMERICAN CITY
470 Park Avenue South
New York 16, N. Y.

WANTED
Director of Public Works

Graduate engineer from an accredited school of engineering with a minimum of 10 years experience in engineering field of which five years must have been in capacity of chief administrative officer in a public or governmental agency. Salary $800-$1,000. Age 32-55. Apply Civil Service Office, City Hall, Lakeland, Fla.

Appraisal & Revaluation Engineers Wanted

The City of Moss Point, Mississippi and the Moss Point Municipal Separate School District is contemplating a complete appraisal and revaluation for tax equalization purposes. Your organization is invited to submit inquiries for our requirements. Please address:
City of Moss Point
Thomas J. Dickson, City Clerk
Denny & Morris Streets
Moss Point, Mississippi.

Superintendent Wanted

Civil Engineer to serve in capacity of Superintendent and Engineer for Sanitary Sewer and Water Works. Please reply to:

South Stickney Sanitary District
7801 S. LaVergne Avenue
Oak Lawn P. O., Illinois
GArden 4-6030

BUILDING COMMISSIONER

The City of Hamilton, Ohio, population of 73,000 is recruiting for a full time Building Commissioner. Requires Professional Engineer or Registered Architect; five years related experience in building construction and inspection. Must have supervisory ability. Age 28-55. Civil Service position; city offers excellent fringe benefits; salary $8000 to $9800. For details, write Harold A. Hart, Director of Civil Service, Municipal Building, Hamilton, Ohio.

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Perris California

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Water, Sewage, Industrial Wastes and Incineration Problems, City Planning, Highways, Bridges and Airports, Dams, Flood Control, Industrial Buildings, Investigations, Reports, Appraisals and Rates.
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Municipal Improvements
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MEMPHIS, TENNESSEE

ALVORD BURDICK & HOWSON
ENGINEERS
Water Works Sewage Disposal
Water Purification Drainage
Flood Relief Appraisals
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"Plans Which Can Be Carried Out"
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1500 Margaret S.E., Grand Rapids, Mich.

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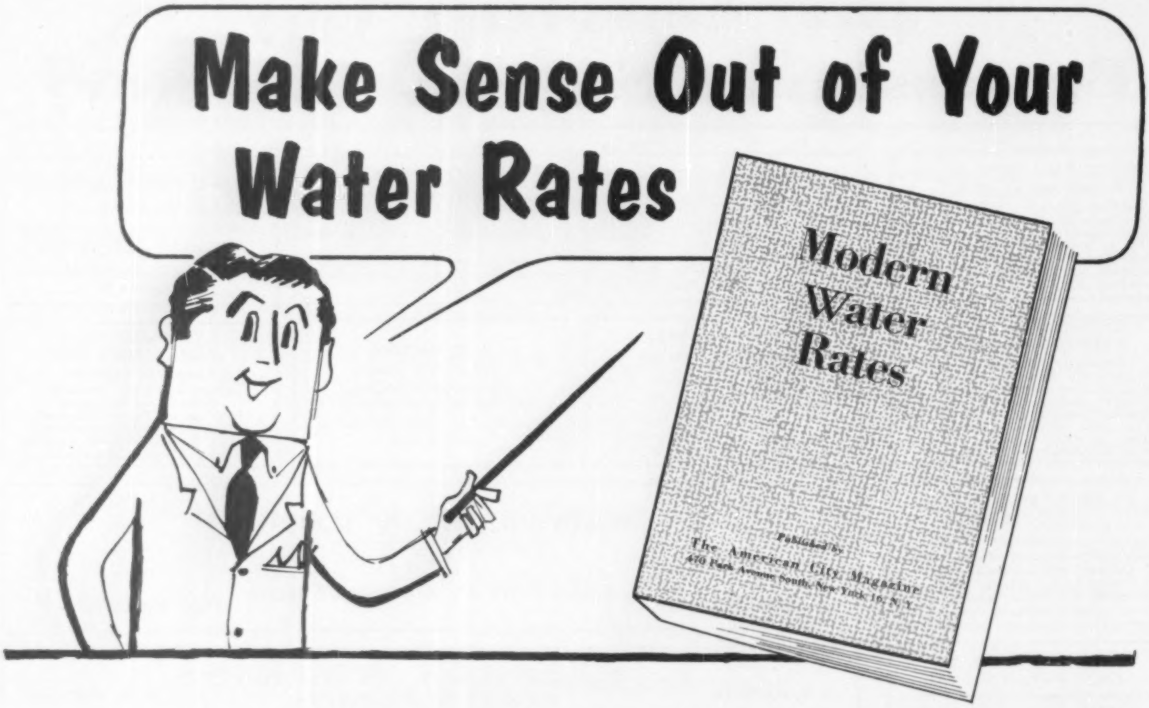
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Based on savings from seal replacement alone, Lifetime Lubricated Rollers soon make up the difference. The metal rings of the Floating Ring Seal can be used over and over again. Take a 14-roller D8. At every roller rebuild, you probably have to buy 28 bellows seals @ $3.97* each or a total of $111.16. Compare this with the rubber "O" rings costing a total of only $45.08*. You save $66.08 in seal replacement costs every time you rebuild or replace. Similar savings are available on all models. And, replacement Lifetime Lubricated Roller and shaft assemblies without end collars are priced below those of Cat Bellows Seal Rollers.

But your savings don't end here! Here are other benefits you get from Lifetime Lubricated Track Rollers:

1. Longer Lived Roller Shells and Component Parts. The Lifetime Lubricated Roller is much stronger and has more metal in the wear zones, specially hardened for extra resistance to wear. And bushings, bearings and shafts are larger and stronger and will last longer. These components are *always* bathed in *clean,* heat-dissipating oil (not grease). Dirt just can't get in to accelerate wear—oil can't get out, thanks to the patented Floating Ring Seal. This means you won't be buying as many replacement bushings and shafts at rebuild or roller replacement time.

2. Maintenance Is Eliminated. Lifetime Lubricated Rollers need no servicing until they're finally rebuilt. You don't have to spend any time nor money for lubrication during the rollers' lives.

3. Easier Installation. Snap-on rings hold seals and end collars in place *before* mounting. End collar bolt holes line up easily with track roller frame holes at installation. Your tractors will be on the go much sooner.

See your Caterpillar Dealer. He'll give you the complete facts on the economy of investing in Lifetime Lubricated Rollers ... for *all* Caterpillar track-type equipment.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

*Suggested consumer prices for these Caterpillar parts

SERVICE TIP: Lifetime Lubricated Rollers need no servicing. But when rebuild time finally comes, keep metal rings matched in original pairs.

CATERPILLAR

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City Hall, Somerville, Mass.

BURROUGHS-EQUIPPED SYSTEM WINS LOUISVILLE AWARD; SAVES $3,900 A YEAR

The scene: City Hall, Somerville, Mass. **The award:** for the year's best municipal accounting system. **The job:** receipting of all tax payments, preparation of related journals, records and daily cash sheets. **The equipment:** two Burroughs F-200 Sensimatic to Punched-Tape units. **The results,** reports Somerville: receipt transaction work load cut 68%; *real* cash control instead of "cash reported" control; no more clerical or copying errors; accurate complete analyses of receipts by day, week, month, year or any combination. All this at a savings of $3,900 a year.

Burroughs and Sensimatic—TM's

Somerville is one of many municipalities helped to new accounting efficiency by Burroughs office automation equipment. For details, action—and results—call our nearby branch now. Or write Burroughs Corporation, Detroit 32, Michigan.

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MICHIGAN
75A
City Clean

$278 monthly operates landfill

City of 6,100 points to speed of Michigan Tractor Shovel as main reason for 80% cut in disposal time (and expense)

Landfill garbage disposal with a rubber-tired Michigan Tractor Shovel has drastically cut expenses in Buchanan, Michigan.

To operate their 11-acre ravine landfill with the Michigan has cost the city *only $10,006.62* for the past three years! *Previous crawler-handling averaged four to five times as much.*

Handles maintenance in spare time

Complete disposal for the city's 1,660 homes and 171 stores and restaurants *is now done in two hours a day* (compared to crawler's eight to ten hours) . . . spare time is put to profitable use by driving the 26 mph Michigan all around town under its own power to do wide variety of loading, unloading, grading, and dozing jobs.

Compaction made after coverage

In normal operation, *garbage*, dumped by a 16-yd packer and four open-type trucks, is dozed at end of each day into marshy bottom-land, then covered with 6 to 12 inches of Michigan-excavated bank-run sand and clay. *Refuse*, averaging 200 cu yds is brought in once a week, with cover made by the 1¼ yd 4-wheel-drive Michigan the next morning. After coverage, the fill areas, which have been limited to 30 ft width, become roadways and turn-arounds for both trucks and Michigan. No pre-fill compaction need be done.

"Could dig trenches"—Supt.

"We've found sand ideal for this fill-before-compaction method," advises Supt. Mike Hankila, "but I think good compaction can be accomplished *after* coverage no matter what the material. We find the ravine-fill method least expensive, too, but *if* we ever *must* dig disposal trenches, Michigan's performance in hard clay—in digging on steep slopes—and in excavating axle-deep mud—assures us it can adequately do this job too."

In three years, only one tire puncture

In all its work over the past 36 months, Michigan repairs have cost only $2028. Tires ran on original treads over the entire period. Only one puncture was experienced. It resulted from an 8″ spike on the dump. Dismount, patch, and re-mount took only two hours. City Manager John Kennaugh credits this long, trouble-free service to (1) the method of operation where cover is made prior to compaction, (2) intelligent operation such as elimination of "cowboying," and (3) Michigan's efficient all-Clark power train which virtually eliminates wheel slip on turns and under load. "Now that we know how efficiently a rubber-tired Michigan works at the dump—and how many maintenance assignments it speeds," says Mr. Kennaugh, "we advise every city to *try* the Michigan method!"

Typical Michigan odd job: truck-loading large tree sections. Other recent assignments: lift old concrete wall, 10 ft long, 4 ft wide, 1 ft thick, *weight 6,000 lbs.* Backfill and load excess dirt from sewer and water main installations. Grade parking lots and play grounds. Cut down banks along streets to improve visibility. Unload tile and water and sewer pipe from trucks and rail cars. Load salt-trucks for winter-time ice-control. Remove snow.

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